The Mining Journal

Established 1835 — Railway & Commercial Gazette

Vol. CCXLVI No. 6296 — LONDON APRIL 20, 1956 — PRICE 9d.

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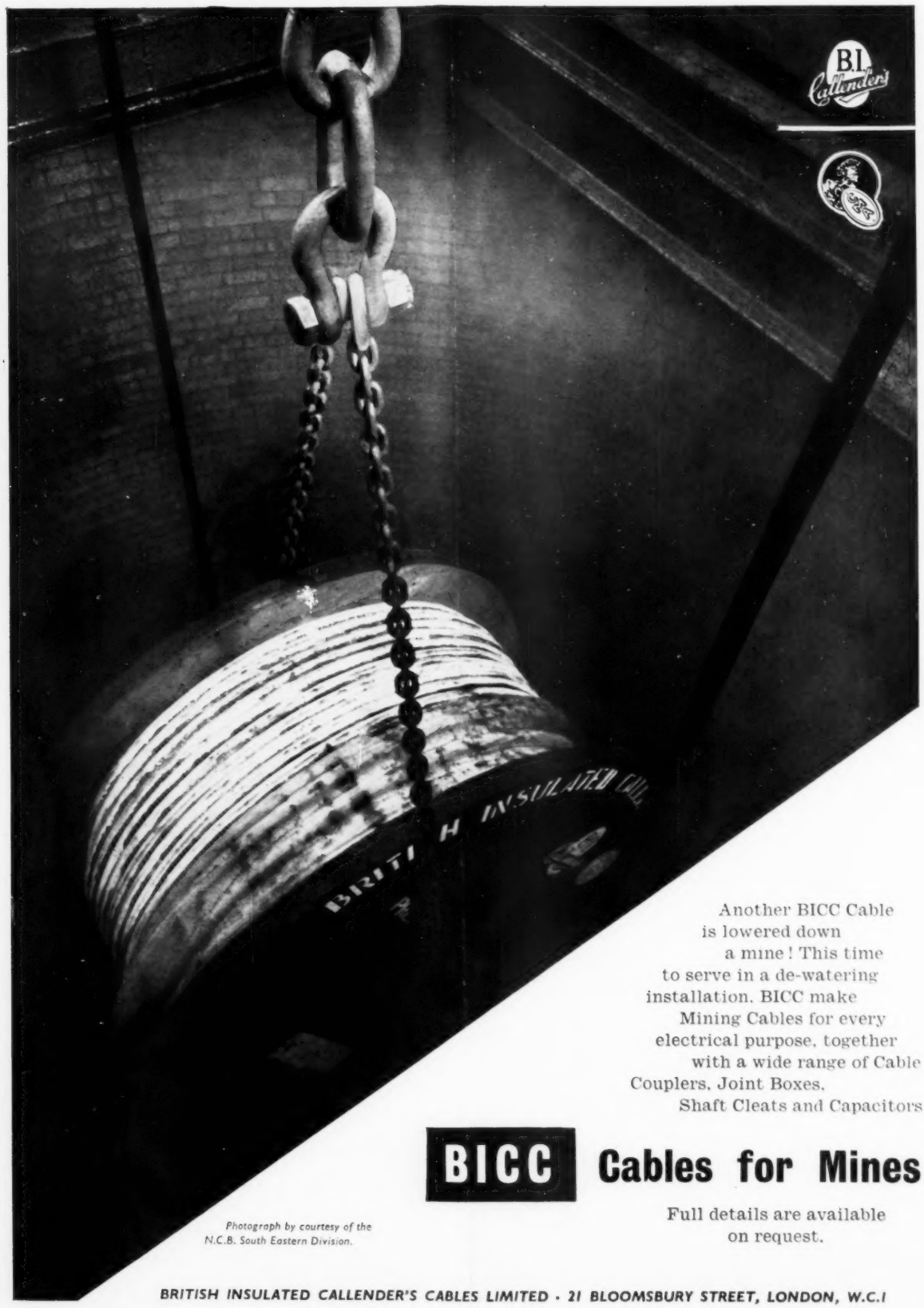

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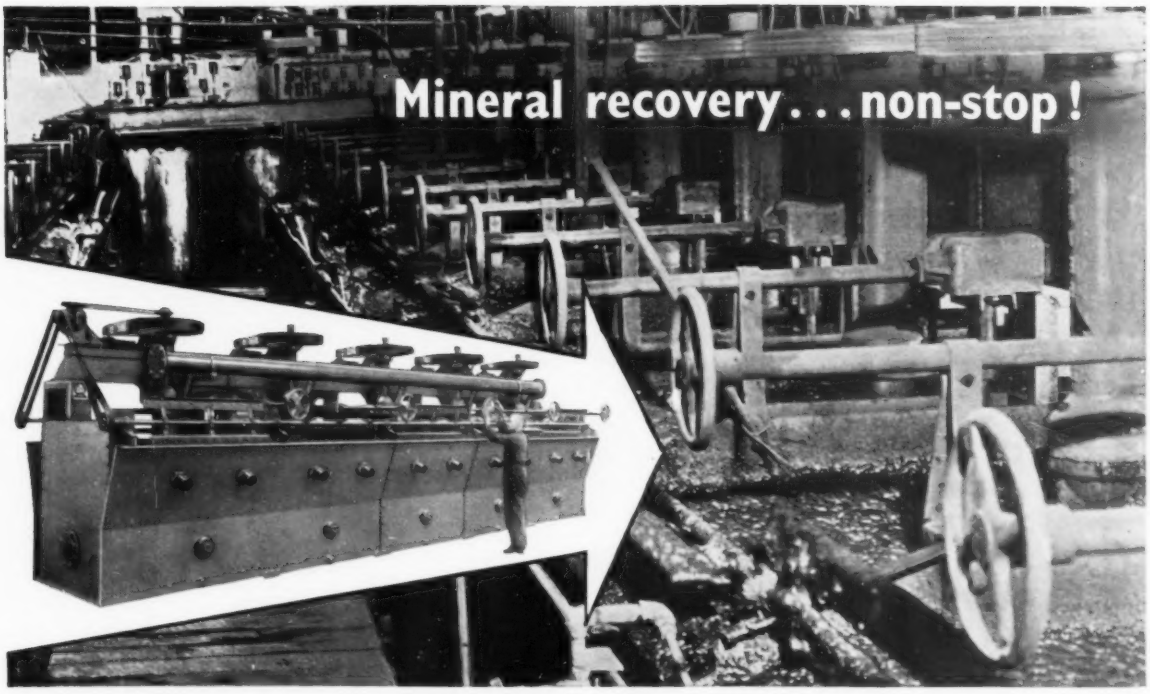

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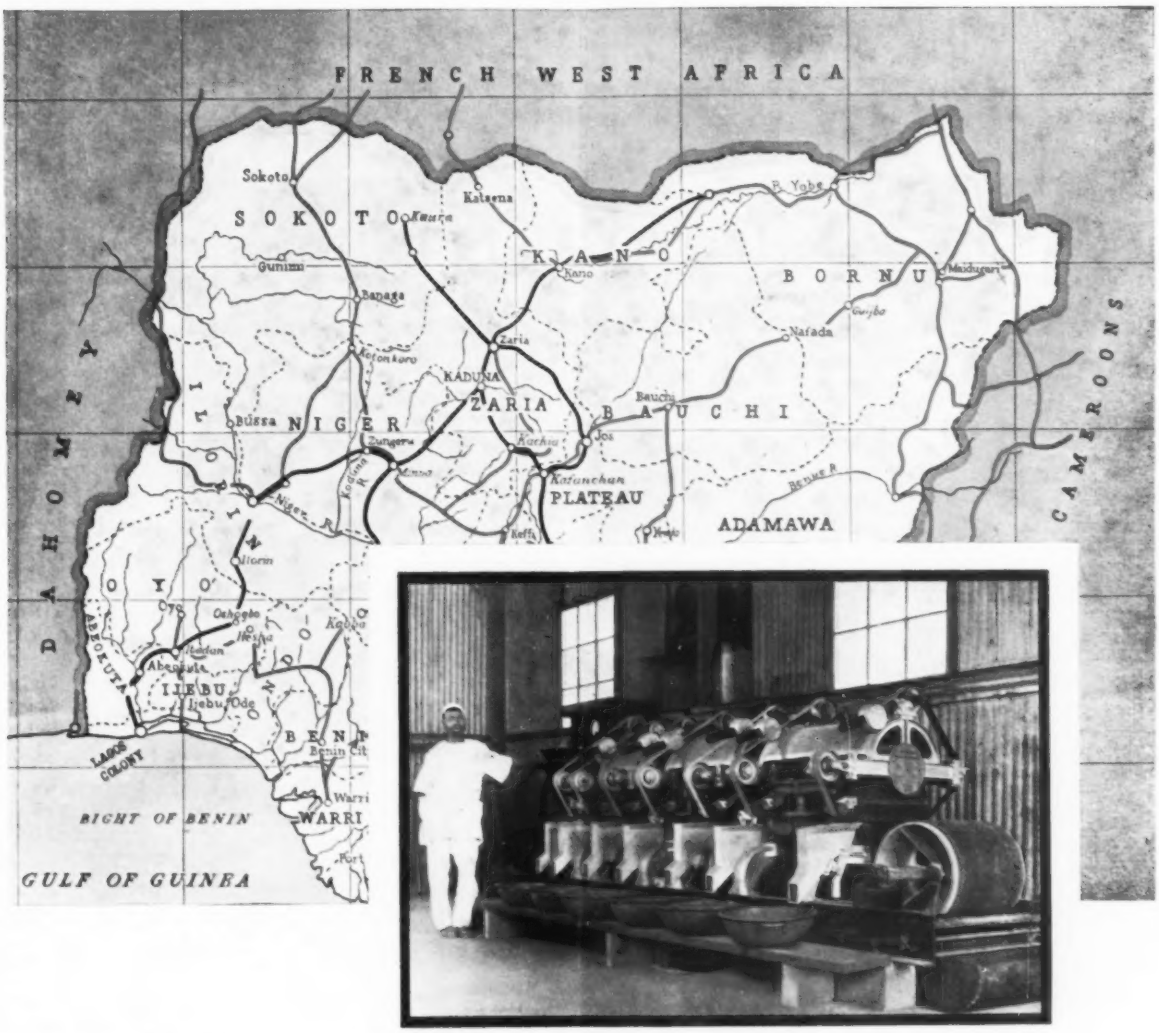
Magnetic separation of columbite in NIGERIA



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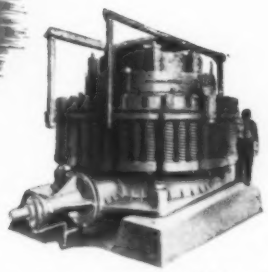

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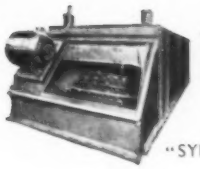

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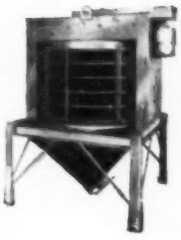

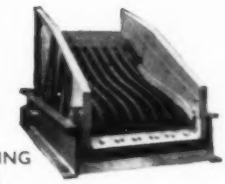

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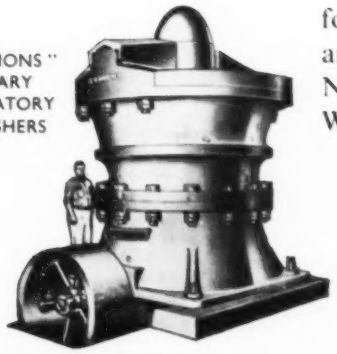

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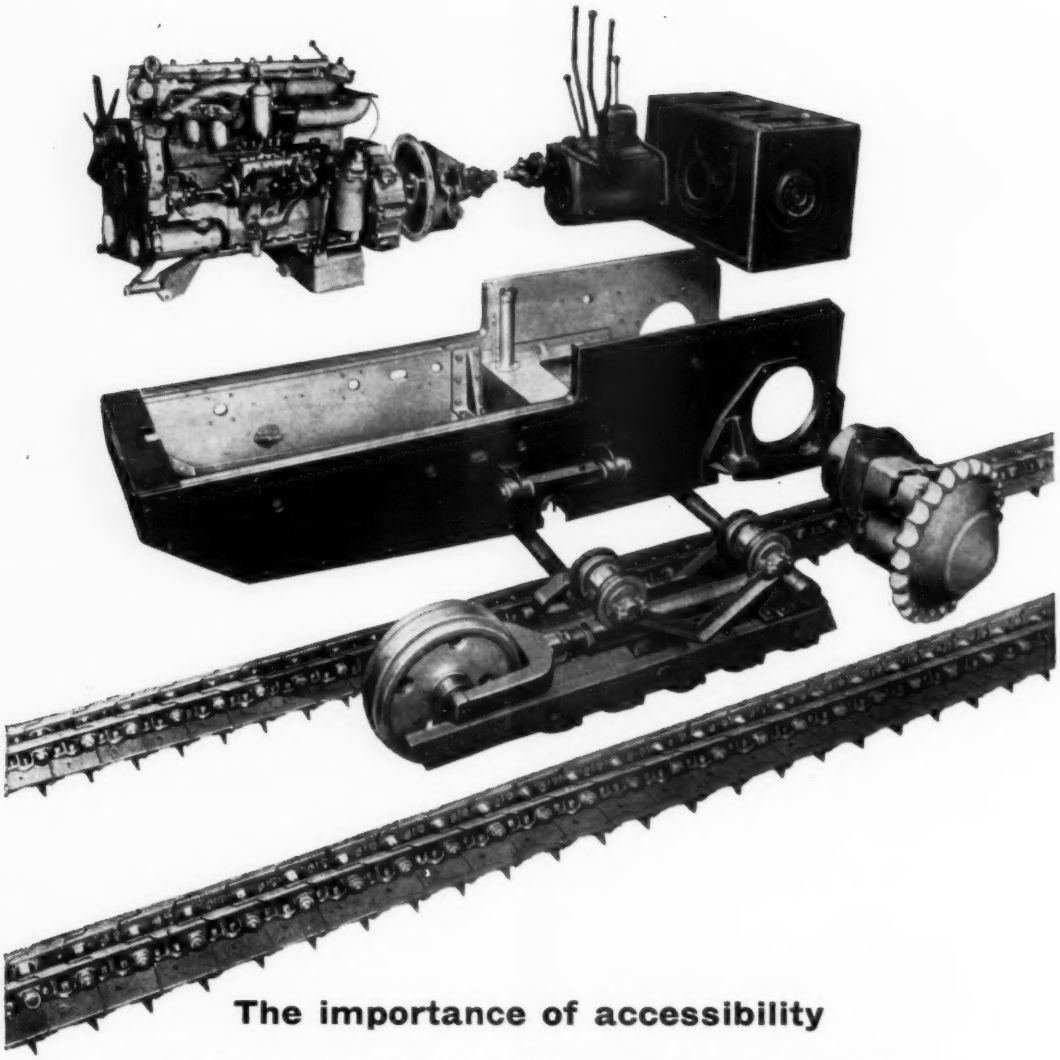

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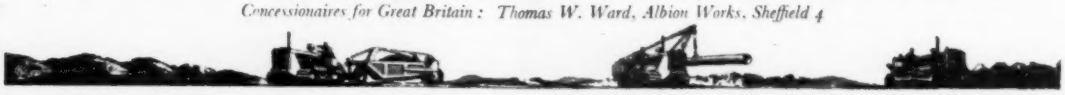

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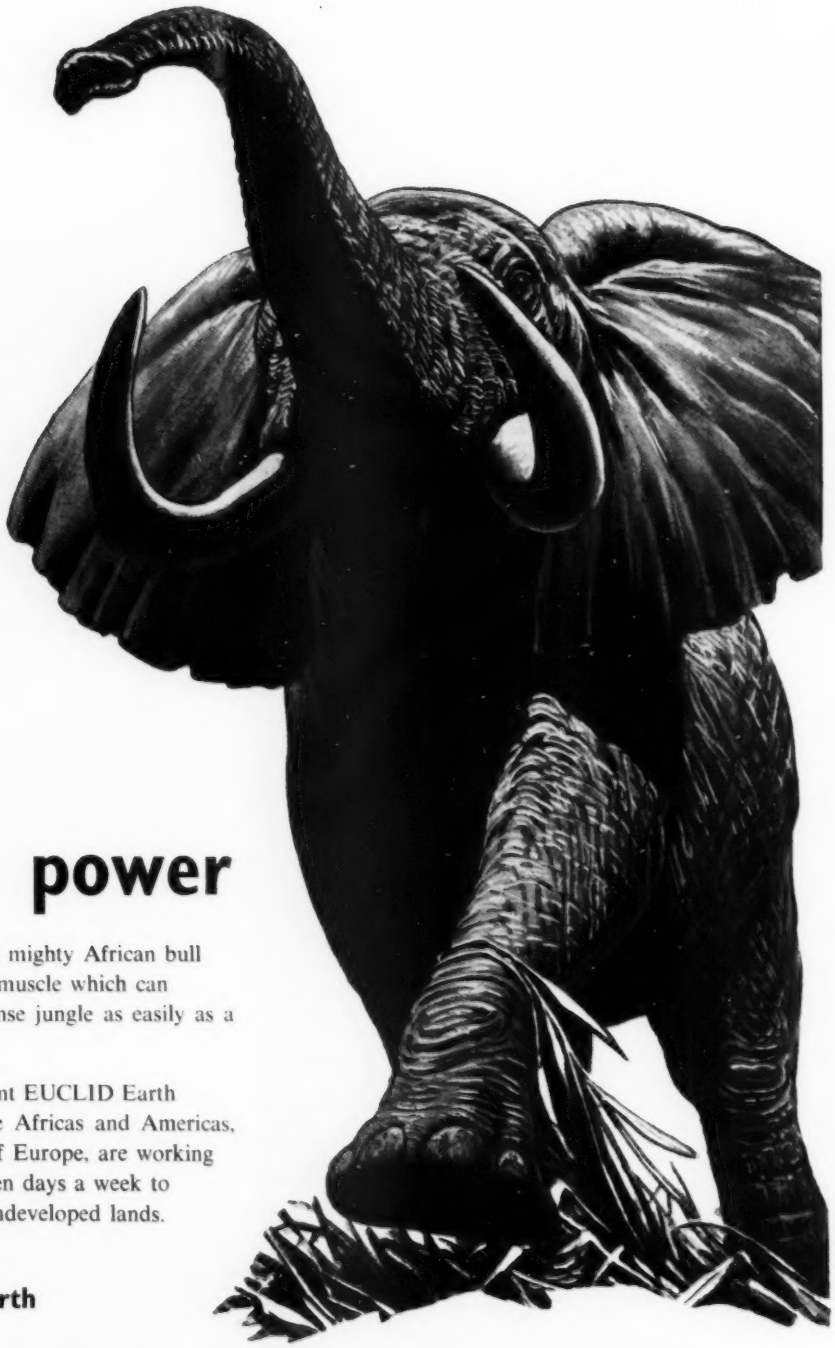

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The Mining Journal
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Vol. CCXLVI No. 6296 LONDON APRIL 20, 1956 PRICE 9d.

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NOTES AND COMMENTS

Budget Brings No Help to Mining

Any hopes entertained that the British mining industry, at home or abroad, would receive sympathetic consideration by the Government this year were rudely shattered after the Chancellor of the Exchequer had presented his budget on Tuesday this week. As expected, the Chancellor's proposals primarily aimed at effecting considerable new savings. There were one or two concessions such as those relating to self-employed persons and to those with large families but, by and large, the budget proposals were interpreted as being complementary to the previous fiscal measures introduced to halt inflation. The initial reaction in the City was one of relief and the F.T. Industrial Ordinary Share Index experienced its biggest rise in one day since last October. This would appear to confirm that increase in the profits tax—which, incidentally, nullifies any gain to industry from the 6d. reduction in income tax last year—will have little or no effect on future dividend distributions.

Thus, the budget was entirely for domestic consumption and the days when our Chancellors of the Exchequer viewed the world as their oyster appear to have gone for good. From the mining viewpoint this is epecially regretable as the urgent need to lighten the burden of taxation on the British overseas mining industry has been apparent for many years. In fact, no more is asked, nor indeed required, than to bring the U.K. tax code as it applies to the mining industry into line with the more enlightened tax provisions operative in other Commonwealth countries. What appears to have been entirely overlooked is the important consideration of increasing incentives to raise the output of all minerals as a means of achieving a painless expansion of foreign exchange earnings more especially so in areas of the Commonwealth not suffering from acute over-employment.

Perhaps the biggest disappointment in this week's budget for the mining industry was Mr. Macmillan's complete indifference to the many recommendations made in the final report of the Royal Commission on Taxation. In particular this applies to the recommendation to allow tax discrimination in favour of a new type of corporation to be known as an "Overseas Trade Corporation", although depletion allowances and exploration incentives also stand high on the list awaiting reasonable understanding and treatment.

Yet, it ought to be brought home to the Chancellor just how much can be done in the way of revitalizing industry by government encouragement dispensed in the form of reasonable tax reliefs.

It may be recalled that about six months ago the Mogul Mining Corporation investigated the Avoca copper mine in County Wicklow and subsequently formed St. Patrick's Mines to work the property. The transition from speculation to an economic mining proposition was only made possible by the Eirean Government's decision to grant complete income tax and corporation profit's tax relief on all profits accruing during the first four years after work had begun, and that the normal effective tax would be reduced by 50 per cent during the subsequent four years.

The present position at Avoca is that the engineering and planning phases have now been completed and the company hopes to be in production before the end of 1958. Overall expenditure is estimated at approximately $8,000,000, some of which funds will be expended on the construction of an over-ground pipeline approximately eight miles long from the mine to the port of shipment, Arklow Harbour. Quite apart from the injection into the economy of the new capital funds, an additional and important benefit accuring to Eire will be derived from the company's output of pyrites, 40 per cent of which should be sufficient to meet the country's fertilizer requirements.

Since the establishment of St. Patrick's Mines a second company, Mining Corporation of Ireland, which is a joint Irish-Canadian Company, has been established and will exploit copper and zinc mines in Beauparc, County Meath and Castleblaney, County Monaghon. The mines, which have been closed for nearly 50 years, have large deposits of good quality zinc and copper ores according to Mr. Patrick Hughes, a director and chief prospector of the new company. The parent company, Can-Erin Mines of Toronto

Ltd., has a capital of $5,000,000 and is expecting to start work at the beginning of next month, preliminary surveys having proved satisfactory. Drilling operations will, it is understood, be sub-contracted to the Cementation Company of Ireland.

Nothing succeeds like success and although no information is available concerning plans for future surveys, enough has already been achieved to arouse the local County Councils to seek help from the government to investigate others areas. In this connection, it has been reported that the Sligo County Council has requested the Eire Minister for Industry and Commerce to undertake immediately a survey of mineral deposits in the County. Deposits of iron ore and copper are known to exist in the area but no survey has been carried out in recent times. If this were not enough a second line of offense has been taken by the County Council whose officials are reported to have held talks with officers of the two newly established mining companies in Eire, with a view to inducing them to seriously consider the exploitation of any promising mineral deposits discovered following the completion of the hoped-for survey.

How close to home and how stark the object lesson has to be before full realization of the parlous condition of the U.K. metalliferous mining industry, can be brought home to the Government, is indeed difficult to assess. But one thing is clear; if aid in one form or another is not soon forthcoming, the time may well be lost forever for making the optimum use of this country's natural resources.

The Camborne School of Mines

Overseas mining has so long been one of Whitehall's "Cinderellas" that any White Paper bearing on its interests tends to be approached with some misgiving—an attitude which, once again, appears to have some justification, this time in the field of advanced technical education.

The White Paper on Technical Education lists 24 colleges which have been scheduled for development as colleges of advanced technology. The Minister of Education, Sir David Eccles, has stated that his department aims to ensure that the proportion of advanced work should be vigorously increased at these 24 colleges, "which already have 75 per cent grant on some of their courses".

An astonishing omission from the White Paper is the absence of any reference to the Camborne School of Metalliferous Mining, which apparently is regarded as being in a different category to the colleges listed because it is not administered by a Local Authority and hence does not qualify for the 75 per cent grant. Instead, it receives a direct grant of £10,000-£12,000 a year from the Ministry to cover any deficiency in running costs.

It is noteworthy that, despite the exclusion of Camborne from the list, the Herriot-Watt College is mentioned in the Plan for Scotland under the heading "Universities and Central Institutions". Yet so far as mining is concerned the two colleges are on a very similar footing, Herriot-Watt specializing in coal mining and Camborne in metal mining. Both award an Associateship, which is recognized throughout the world as a valuable technological qualification, and both run a three-year course in mining.

Can it be that Camborne is being treated as a "Cinderella" college because it is concerned exclusively with mining, and supplies technologists largely for overeas? If so, the Government is adopting a very short-sighted attitude towards this college, since graduates from Camborne go all over the world and in later years are often responsible for ordering plant. Camborne's value to Britain in this respect is certainly appreciated by the country's engineering manufacturers. A point that might usefully be emphasized in this connection is that the tin mining industry, which is largely in British hands, is staffed by more graduates from Camborne than from any other university or college.

It is understood that at the present time the question of the provision of more advanced courses on a post-graduate level and the development of a research school are under consideration by the governing body, but there is no question of increasing the amount of "advanced work," as implied in the White Paper, because the standard of Camborne's work is already fully recognized by the profession. Such new courses would enable holders of the A.C.S.M., as well as certain university graduates, to become specialists in a particular branch of mining engineering—a provision which is becoming increasingly important in view of the growing tendency towards specialization in an industry which is becoming year by year more involved in its technology.

The *West Briton* has reported that Sir David Eccles, in replying to a query from Mr. E. H. Hayman, M.P., has pointed out that the exclusion of Camborne from the list of establishments denoted as colleges of advanced technology does not mean that it cannot build up its advanced work, and that his department will be interested to receive any proposals. In the absence of further Government assistance, however, a more pressing consideration than the financing of further developments is finding the money which is necessary to maintain in the *status quo* without loss of efficiency and to embark on a research school. The so-called "deficiency" grant is no longer adequate for existing needs. In default of a change of heart by the Ministry, only increased support from the mining industry can enable the college to keep up the high standard with which its name is associated throughout the world.

So far as research is concerned there is no dearth of opportunities in the industry, particularly in connection with work in geophysical prospecting and in extractive metallurgy and mineral dressing. One direction in which the mining industry could assist would be by sponsoring such research.

Expansion of the Titanium Metal Industry

Reports from New York state that the expanding U.S. production capacity for titanium sponge and metal, prospects of further price cuts, and improved quality control all indicate that the titanium industry has started to come into its own. By the end of the year titanium sponge producers will have a total capacity of at least 22,500 tons annually. Production of metal shapes, mainly for the aircraft industry, amounted to 1,900 tons last year, 46 higher than in 1954, and a further increase is expected in 1956. Technological advances have combined with U.S. defence needs and a high level of consumer economy to widen the markets for titanium and permit price cuts, which in turn have further expanded the markets Barring war or further inflation, the probability is that prices will fall below the present U.S. figure of $3.50. A level of $2 per lb. in the near future has been predicted.

Following a $650,000 order for titanium bolts for an Air Force plane received late in 1955, the Standard Pressed Steel Company has received similar orders from two leading aircraft makers as well as approval of titanium fasteners by a third company and by the U.S. Navy. Titanium bolts are to be used on two new types of jet planes.

The Japanese titanium industry, which has grown up rapidly since its emergence three years ago, plans to expand its output in the next financial year to 2,600 tons from an

estimated 1,800 tons in the current financial year. The industry is also trying to increase sales of it products to the U.S., which takes 90 per cent of Japanese production. Domestic Japanese requirements for titanium are almost insignificant.

The metal is now being employed in a surprising array of non-defence applications where resistance to corrosion is vital. The results of Du Pont's extensive programme for the development of civilian markets for titanium have been described for the first time by Mr. Leo J. Barron, of Du Pont's Pigments Department, pioneer manufacturers of titanium sponge. Mr. Barron listed new markets ranging from chemical and food processing equipment to marine hardware for saltwater sailing boats. In many uses, under extremely corrosive conditions, titanium has far outlasted conventional metals, in one application by a ratio of more than 1,800 to 1.

The Coal Industry

(From Our Coal Correspondent)

In America soft coal prices were generally increased from April 1 by amounts varying between 15 and 50 c. per ton. The increases coincide with an 80 c. per day rise in wages to the miners, which came into operation on that date. This rise is the second stage in an agreement negotiated last year between John L. Lewis's United Mineworkers' Union and the coal operators. Prices of top grade and industrial house coal go up by an average of 25 c. per ton to $4.40.

THE PRICE STRUCTURE

The general effect of the increases restores the price level of the industry to that existing in 1948, before the depression in the coal industry precipitated a succession of price cuts that virtually crippled the industry's economy. However, with the resurgence in demand and the prospects of continued heavy requirements for many years to come, the soft coal operators are thinking now of large scale expansion. The industry has launched an informal campaign to raise between $1,500,000,000 and $3,000,000,000 for expanding its production capacity. Large scale anthracite operators are now contemplating moving into the bituminous field, for, although the downward trend in anthracite production is slackening off, the long-term future for bituminous is far more favourable. One of the chief headaches at present for the American coal operators is the high rail freight charges, and, accordingly, large scale movement of coal by alternative methods is being considered.

Pipeline transmission is being pushed ahead, a noteworthy installation being that of the Pittsburg Consolidation Coal Company's 110 mile pipeline to carry coal from Eastern Ohio to Lake Erie. The U.S.A. coal industry has long stressed its handicap in having to move its products by rail in competition with the oil and gas industries, who make use of pipelines. In the pipeline project already under way Pittsburgh Consolidation will deliver its coal slurry at the rate of 1,200,000 tons per year over a 15 year period.

Belt conveyor use continues to grow in popularity, and more and more instances are evidenced of the use of belt conveyors from mines or preparation plant direct to consuming facilities nearby.

What the long-term effect will be on the U.S.A.'s railroads if large scale pipeline transmission and belt haulage comes into being is not quite clear, but, bearing in mind the fact that the railroads are currently receiving more than $1 billion a year from coal haulage, the importance of the coal industry's contribution to the profitable operation of the railroads is apparent.

On April 1 the price ceiling on Ruhr coal was finally lifted, thus freeing coal prices throughout the community. This move has long been advocated by Germany but controls had to be retained so long as the dominant West German coal selling cartel GEORG remained in existence. Under recent ruling by the High Authority of the E.C.S.C. this central sales organization for Ruhr coal has been dissolved because it violated the anti-cartel clauses of the Schuman Plan Treaty. Three separate sales organizations have been set up, each handling the sales of some 20 mines in the Ruhr.

The decision to free prices for Ruhr coal met with a mixed reception in the community, although in announcing the abolition of controls M. Mayer said the High Authority reserved the right to reconsider its decision and reimpose maximum prices if excessive increases occurred over the next few months. Germany has stated that any immediate price increase will not exceed two marks per ton as the Government are prepared to offer concessions to the Ruhr coal operators which will benefit the latter by some four marks per ton.

Although Parliamentarians from the six Pool countries recently commented that the Community's activities to date have been so successful as to warrant extension into further economic spheres, last month's announcement by the Chairman of the French Steel Federation suggests that disunity within the Community is an ever-present threat.

Speaking at a press conference M. Pierre Ricaud pointed out that France had joined the E.C.S.C. on the understanding that the economic union between France and the Saar would continue. If the Saar joined Germany, France would lose much of her coal and steel capacity and as M. Ricaud put it " might well feel she had made a bad bargain ".

THE FAR EAST

The biggest coal washing plant in Asia will be ready for operation at the Kargali/Bokaro colliery in Bihar by the beginning of 1958, it is reported from New Delhi. Costing Rs.16,000,000, the plant will wash metallurgical coal required for the state-owned steel plants being constructed at Rourkela in Orissa and at Bhilai in Madhya Pradesh. It will have a washing capacity of 2,220,000 tons annually.

The contract for the plant has gone to the Japanese firm of Daiichi Bussan Kaisha Limited. The Sumitomo Machinery Company Limited of Japan is also collaborating in the supply of the plant, which will be designed by Nagata Seisa Kusho Limited, who have erected 40 such plants in Japan, China, Manchuria and Karafuto.

As previously mentioned in *The Mining Journal*, India contemplates boosting coal production by 50 per cent over the next five years. To help in this task the Government is considering a Soviet offer of technical aid and already drilling rigs have been imported from the U.S.S.R. There is no doubt that if India is to remotely approach the 1960 target figure considerable outside help will be needed. Britain, France and both the Federal and East German Republics have also offered technical assistance.

The Japanese Government has decided to build up a coal stockpile to meet shortages caused by the current strike of coal miners. Arrangements have been made to import coal from China and Russia. Towards the end of last month the Government banned coal exports from Japan. The strike is the culmination of protracted negotiations regarding pay increases for the miners. Prior to this general stoppage of work there had been a series of guerrilla strikes by the miners countered by lockouts. Japan's coal output is normally some 30,000,000 tons per year.

COAL RESEARCH——II

Drilling, Strata Control and Coal Cutting

This is the second of two articles on the work of the Mining Research Establishment of the National Coal Board, Worton Hall, Isleworth. Research on environment problems and the development of instruments for dust and gas control were reviewed in our issue of April 13.

Drilling is basic to many mining operations such as shot-firing, exploration, methane drainage and roof bolting, and many millions of feet of hole are drilled annually in rock and coal at the Mining Research Estblishment. A considerable amount of study has therefore been devoted to rock drilling processes.

In the past the percussive method of drilling has been used for rock work and the rotary method for coal winning. It has been realized recently that rotary drilling can offer advantages in certain rocks which are not too hard or abrasive. The chief advantage of rotary drilling as compared with percussive drilling is that higher speeds of penetration can be achieved. Another feature is that dust production is somewhat less of a problem, a most important advantage in underground mining.

The most common method of reducing the amount of airborne dust resulting from drilling operations is to pass water along the drill rod to the drilling tool. Another method is to draw the dust by suction along the drill rod or hole and deposit it in a container. Some work has been done on a comparison of both methods when used with percussive drilling and it has been found the dry method is equally as efficient as wet drilling.

ROTARY-PERCUSSIVE DRILLING

A comparatively new process of drilling, the rotary percussive method, is now being studied. This combines the use of the two methods of drilling and the work in progress is intended to determine to what extent the low bit wear of percussive drilling can be achieved in conjunction with the high penetration rates of rotary drilling. One advantage of the use of the rotary-percussive drill is that in medium hard rocks the rotary action can be used alone and the percussive action applied in conjunction with the rotary motion when the rock is too hard for pure rotary drilling.

A rotary drilling rig which has been developed allows the principles of rotary drilling to be investigated at penetration rates up to 10 ft. per min. It has been shown in earlier work that, while penetration rate can be increased by means of an increase in thrust or pressure applied to the tool, a limit is reached at which the drilling debris is generated more quickly than it can be evacuated. A complete study is being made of this "clogging" phenomenon and certain design factors have been determined which tend to reduce its gravity. One improvement which has been made is the introduction of a streamlined joint between the rod and the bit to ensure unrestricted flow of cuttings from the bit to the scroll of the rod. Tests with this arrangement have shown that a higher penetration rate can be attained before "clogging" supervenes. Another fact which has emerged is that the amount of flushing water supplied to the tools governs the penetration speed attainable before the onset of "clogging". This is particularly important with smooth rods which do not have a scroll to assist in the ejection of debris.

Other factors which are being studied include the effect of rotation speed, type of tool and disposition of cutting edges.

Three "standard" rocks are used for the work, a hard abrasive sandstone (Pennant Rock from South Wales) a softer sandstone (Darley Dale Rock) and a typical coal measure shale (from the Kent Coalfield).

It is hoped that when the work on rotary and rotary-percussive drilling has been completed, a large amount of useful information on drilling will have been accmulated, which will enable the correct tool and method to be recommended for each drilling problem as it arises.

The tools used for rotary or percussive drilling in coal or stone have to withstand very severe conditions of wear. They are for this reason tipped with very hard materials; the so-called "hard metals" or "cemented carbides," first developed in their modern form in 1926, are now used for this purpose throughout the coal industry. These materials have to be produced by special sintering techniques from fine powdered carbides, notably tungsten carbide mixed with a softer bonding agent, which is chiefly cobalt metal. Many factors can influence their performance; in particular the size of the carbide grains and the proportion of cobalt.

A detailed metallurgical investigation is being carried out with a view to determining optimum grades of these hard metals for modern onerous conditions. This consists of studies of the wear of samples of a wide range of compositions in the cutting of abrasive rocks and of the chipping and fracture of these substances in the impact of sharp edges against hard rock. The results to date have already proved of considerable value and form the basis for a provisional N.C.B. Specification.

In its work on Strata Control the Mining Research Establishment has two main objectives. The first is to obtain an undertaking of how rocks are moved and stressed by mining operations, and conversely how the stresses affect the working of the coal; the second, to devise methods of working and plant which will enable these movements and stresses to be controlled so as to improve both the working conditions for the men and the output of coal.

ISLEWORTH-DOWTY ADVANCING SUPPORT

An example of this latter sphere is the development of the Isleworth-Dowty Walking Prop. The ordinary pitprop must, of course, be erected and set manually on each occasion it is used and then taken down and removed when the time comes. The object of the "walking prop" project is to devise a unit which can be made under either local or remote control, or perhaps later automatically, to follow the progress of a face after the passage of a machine and maintain support of the roof all the time. Trials have already taken place of prototypes and six units are currently being manufactured by the Dowty Mining Equipment Company for an extended underground trial. The unit should be particularly well suited to the support of inferior roofs.

The first step in obtaining an understanding of the phenomenon in any field is to make the relevant measurements and much of the work on Strata Control at the present time is concerned with the development of the instruments necessary for this purpose. The pitprop load cell, for example, is intended to measure the load carried by conventional props. It is a steel cylinder held between two steel plates, and is inserted between the pitprop and the roof bar. The strain on the inside of the cylinder, measured

by electrical resistance strain gauges, gives a measure of the load. To minimize the errors caused by eccentric loading, eight active gauges, evenly spaced around the circumference, and eight temperature compensating gauges are wired in a Wheatstone Bridge network. The galvanometer on which the load is read and the 6 V. supply battery are housed in a separate wooden box. This box can be strapped to the chest of the observer, and by plugging into each load cell in turn, any one operator can read any number of cells without the necessity for trailing cables.

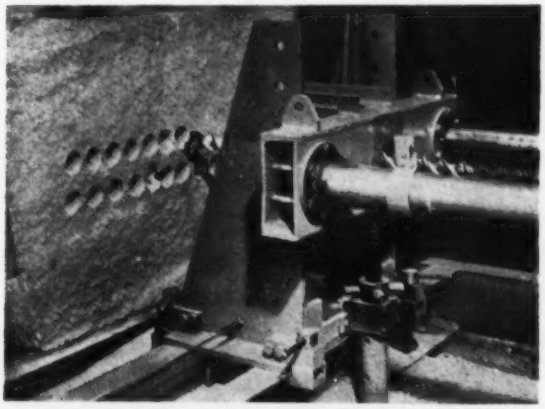
In order to make the cell as light as possible the thickness of the steel plates forming the cover and the base has been reduced to a minimum, with the result that they suffer distortion under load and the whole cell is thus subjected to a highly complex strain system. The study of this system, which formed part of the development work, has proved very rewarding in that it has helped to a better general understanding of this type of load cell.

DYNAMOMETERS AND STRAIN GAUGES

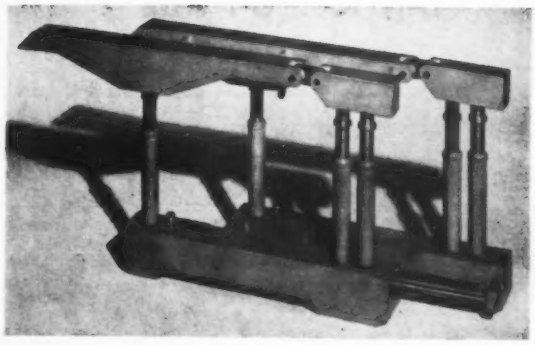
Roof bolting is a device for supporting the roof of a working by passing long steel bolts through the surface rock and anchoring them in the overlying strata. An instrument for measuring the load carried by such bolts has been developed at M.R.E. Its principle is basically the same as that used in the pitprop load cell, but in this instance the cylinder carrying the strain gauges is placed between the bearing plate or roof bar and the nut of the roof bolt.

A technique for determining the variation in stress at some distance inside rock is being developed. The basis of the technique is the measurement of the strain in a metal tapered plug forced into a tapered socket at the end of a borehole, and the interpretation of this strain in terms of variation in stress in the rock. The strain in the plug is measured by electrical resistance strain gauges cemented internally into the fabricated plug.

For the determination of the stresses in the pack a dynamometer incorporating a hydraulic system has been designed. An 8 in. dia. steel cylinder and piston buried in the pack are connected by a thin tube to a pressure gauge in the nearest roadway. The readings on the gauge then provide a guide to the stress in the pack. The thin connecting tube is protected by a substantial steel pipe. The readings of the gauge, however, are affected by the modulus of elasticity of the dynamometer, the size of the pack material, the nature of the floor and the position of the dynamometer relative to the instrument. To assess the effects of these factors it will first be necessary to make model experiments. A 1 in. dia. model dynamometer has been constructed for this purpose.



Rotary drilling rig showing rock samples and tools



A model of the Isleworth-Dowty advancing support

Unfortunately, coal ploughs have not yet been successfully applied to the great majority of British coal seams because the coal is generally too hard to be worked by any commercially available plough. With existing machines in hard coals the haulage forces become too great and there is the complementary difficulty of maintaining the conveyor sufficiently rigid to provide the large reactions necessary to steer the plough. The work at M.R.E. on ploughing has for its main object the development of a machine which will work British coal seams by this method and for a second object the obtaining of a fuller understanding of the Establishment's work on coal breakage. The work is carried on partly in the laboratory and partly underground.

A study was made of the force required to break blocks of three types of coal with a blade. The force was found to be proportional to the compressive strength of 1 in. cubes of the coals.

In addition to the component of force parallel to the coal face, which is required to drive the plough blade through the coal, there is also a force perpendicular to the face. The relative magnitude of these two forces plays a part in the steering of coal ploughs. A series of tests are in hand in which both these compents of force are measured.

THE PNEUMATIC AUTO-PERCUSSIVE PLOUGH

The haulage force demanded of an ordinary plough fluctuates as the blade traverses the coal. In the auto-percussive plough large peak forces are obviated by arranging that a pneumatic hammer comes into action whenever the resistance to the blade exceeds a preset value. As soon as the coal is broken and the resistance has diminished the percussion ceases. In this way the haulage force is reduced and steering of the plough is facilitated.

Experimental auto-percussive ploughs have been tried out in the very tough Garw Seam in South Wales and the Main Bright Seam in the East Midlands, and the results hold out good promise that it will, in due course, be possible to develop a production machine which will be able to plough the hardest British coals at economic rates. A third experimental model incorporating the auto-percussive principle is being constructed in the Establishment and will shortly be tried out on another face in the East Midlands. It is designed to fit a Panzer conveyor and to be powered by an Anbauhobbel haulage modified to run to constant force instead of constant speed. The design aims at a 4 in. cut, a depth which minimizes haulage force whilst at the same time ensuring a product comparable in quality to that yielded by hand filling. Experience with the earlier machines has shown that dust production is relatively small.

KOEPE SYSTEM IN SOUTH AFRICAN GOLD MINES—V.

Considerations in the Construction of Koepe Mine Hoists

The following article, the concluding instalment of a series discussing the efficiency of the Koepe hoisting system in gold mines of the Witwatersrand and Orange Free State, describes various aspects of construction such as power requirements, the hoist itself, pressure and rope attachments. The series, now concluded by the article appearing herewith, has embraced all aspects of the Koepe hoisting system in relation of these South African fields. The articles have been condensed from a paper presented at the monthly general meeting of the South African Institution of Mechanical Engineers on January 12, 1956, by L. T. Campbell Pitt, O.B.E., M.I.Mech.E., a Past President of the Institution, and F. G. Zeppenfeld and A. W. P. Hallett, M.A.(Cantab.), M.I.Mech.E., members.

The graph below shows for rock hoisting duty a comparison between a two-rope Koepe having one skip and a counterweight, a two-rope Koepe having twin skips, and a double drum winder having two skips. It should be noted that:

(a) The payload for the counterweight system is the same as that for the twin skip system;
(b) The weight of the counterweight is equal to that of an empty skip plus half the payload;
(c) To accommodate the additional suspended load caused by the counterweight, and to keep the rope tread pressure at 210 lb. p.s.i. the dia. of the Koepe wheel must be increased by about seven per cent;
(d) The total work done is divided between the upcoming full trip and the downgoing empty trip. In the latter, work is done in raising the heavier counterweight;
(e) The output for one hoist is halved when using a counterweight compared with twin skips, since only half the number of trips carries a payload;
(f) The output for one hoist is less than that of a drum winder. An installation would require two independent Koepe hoists for complete flexibility and from considerations of egress, but only one drum winder need be used since clutching is possible. The combined output of the two hoists would still be about 60 per cent greater than that of one drum winder; and
(g) The R.M.S. horsepower for the counterweight system is considerably less than for either the twin skip system or the drum winder. At 5,000 ft. it is 69 per cent of the twin skip and 67.4 per cent of the drum winder.

The design and arrangement of the drive has an important bearing on the lay-out and support of the hoist. Electric drives only are considered in this paper.

HOIST CONSTRUCTION

If the hoist is ground installed as is a drum winder, the effect of the drive arrangement is a matter of economics in the purchase and operation of the hoist. If, however, the hoist is a tower-mounted type, i.e., installed over the shaft, the drive arrangement influences support design and costs to a much greater extent. The most expensive hoist is the one fitted with direct coupled motors. The simplest arrangement from a support point of view is the direct coupled twin motor with overhung armatures. The latter gives a simple, symmetrical hoist, supported on two bearings only. The supports can then be designed to predetermined safe stresses.

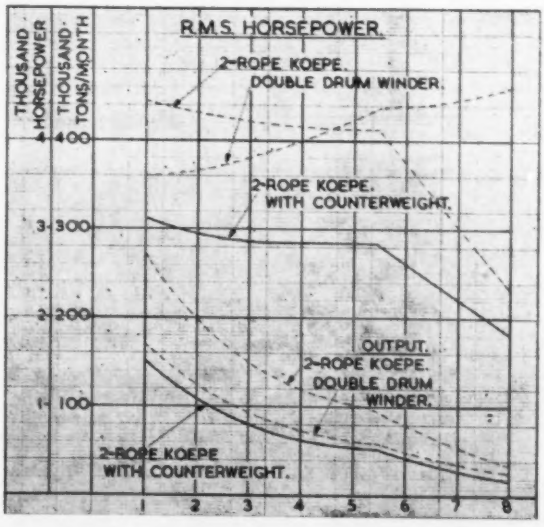
If, however, the hoist has more than two bearings, or is a geared drive, the supports must be designed to small and uniform deflection limits so as to obviate undue stresses on hoist components and disturbance of gear and bearing alignments due to unequal vertical movement. These deflections may have to be limited to less than 0.01 in. and with little tolerance in deflection over the support structure even though each support point loading may not only differ appreciably but may vary considerably throughout each trip. The difference in cost between the more expensive direct-coupled drive and a less expensive geared drive may be more than spent on the additional cost of the structure for the latter. The spring mounted centre drive unit construction gearbox to some extent reduces the disadvantage of the more conventional gear drive.

Modern A.C. and D.C. drives are both suitable for geared hoists. The authors, are, however, of the opinion that for automatic and semi-automatic operation the D.C. drive is still to be preferred. The dissipation of heat from the control system of A.C. drives is a disadvantage to underground installations.

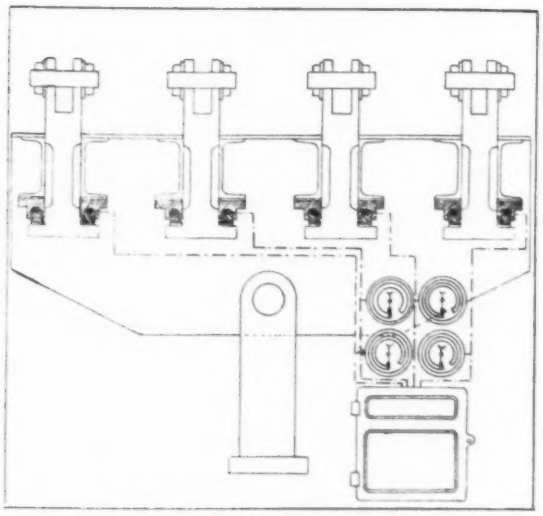
An advantage claimed for A.C. hoists is that the standing loads of an M.G. set are eliminated. The replacement of the M.G. set by rectifiers will overcome this. The rectifier has, moreover, advantage in layout in that it is easier to accommodate. In a tower for example, the installation of an M.G. set adjacent to the hoist is a much more difficult problem and, consequently, more costly than is the case for a rectifier.

CONSIDERATIONS OF PRESSURE

To minimize the stress in the rope due to bending, accepted practice places the ratio of wheel to rope dia. in the region of 100 : 1. However, when calculating the dia. of the wheel, to conform to the limiting rope pressure men-



Comparison of output and R.M.S. horsepower. The double drum winder showing 2-rope Koepe —2 skips and 2-rope Koepe—1 skip —1 counterweight. Horizontal numerals denote hoisting depth in thousands of ft.



Diagrammatical representation of the compression mechanism manufactured by the Statimeter Co.

tioned in the previous paragraph, the corresponding ratio of wheel dia. to rope dia. is generally in excess of the above ratio.

Standard practice is to design the Koepe wheel with removable rope treads, comprising grooved blocks fastened around the periphery of the wheel. These inserts can be made of various materials such as laminated leather, elm wood, bonded fibre, woven material and in some cases aluminium alloy. In the first installation at Libanon G.M. Co. Ltd., an insert was accepted which is of the laminated type, built up of alternate layers of leather and chrome leather cemented together. From general observations this appears to be the most popular type of insert for all round service and suitable for most climatic conditions.

The main bearings of a Koepe hoist have to support very heavy loads but the rotational speed is low because of large driving wheel dia. This duty appears to be ideal for roller bearings which can be permanently lubricated and sealed whereas large plain bearings with ring oiling are less reliable and take up more room. With plain bearings a chain instead of a ring or a gravity oil feed system is preferred. After long standby periods the oil film in a plain bearing may be inadequate at the moment of starting.

REMARKS ON BRAKE SYSTEMS

There should be two independently constructed and operated brakes which can be operated separately or together. The maximum deceleration recommended is 6.5 ft. per sec. per sec. which would be an emergency condition. The normal operating deceleration is usually 3 ft. per sec. per sec. There is a number of designs of the brake gear which vary between the floating post type and the fixed caliper type. There are many variations of each. The fixed caliper type has the virtue of simplicity and rigidity and provided the caliper leg lengths are adequate will make sufficiently even contact between brake and brake path.

In all brake systems the authors are firm believers in adequate pins and bearings and do not like the use of high tensile steel components which are more prone to fatigue and, by designing to increased stresses, reduce pin dimensions at the expense of excessive bearing pressures. Concentration of stresses at any point of any component is bad design. This is not uncommon in tie rods. Brake post and caliper base pin anchors should be designed so that they are firmly located in all directions under the most onerous conditions. This comment may appear superfluous in such a paper as this. It is a point of installation design as well as hoist design and it was felt that its importance justifies the inclusion of these remarks in this paper.

Brake operation may be either hydraulic or pneumatic, but it must be designed to fail to safety.

ROPE ATTACHMENTS

With multi-rope hoisting installations it is necessary to ensure that each individual rope carries an equal share of the load.

On the pioneer four-rope hoisting equipment installed at Hanover Colliery, Bochum, a very elaborate compensating gear was originally provided on each conveyance, but sluggish response due to friction of this equipment was such that it was inoperative and after a short trial period it was found to be quite unnecessary and, in fact, became locked.

It was agreed, however, that a reliable method of measuring rope tensions should be installed and a form of pressure gauge known as the slotted link dynamometer was developed by the G.H.H. Company and incorporated in the attachment connecting the ropes and the conveyance. By measuring the gap in the slotted link, which is a compression link, it is possible to calculate the tension in each rope.

After an extensive period of operation under these conditions it was found that no difficulty was experienced in adjusting ropes and maintaining equal tensions in all ropes. From publications by Fritz Lange on his experience with the Hanover equipment, it is observed that the maximum difference in rope tension did not at any time exceed one ton.

An arrangement for measuring rope tensions on multi-rope Koepe installations for one of the mines of the Gold Fields Group has been designed by ourselves and incorporates compression mechanism manufactured by the Statimeter Company. This compression mechanism is designed to suit the size of king bolts on this particular installation and is shown diagrammatically above. With this arrangement direct readings can be taken on each of the gauges which will be calibrated to record the load in lb. in each rope. Provision has also been made to incorporate a recording gauge and with this instrument it will be possible to measure both static and dynamic loads at any period during the hoisting cycle.

The final adjustment or any subsequent adjustment which may be necessary during the life of a rope is usually carried out as follows:

(a) The conveyance is lowered to the loading box and filled;
(b) The opposite conveyance is then in the tip position in the headgear;
(c) The tensions in each rope are compared—if adjustment is necessary it would be made by pulling the particular rope which is out of adjustment through the capel—whilst the conveyance is supported on baulks at the bank. The capels described in this paper are designed for this purpose.

Wedge guides are installed at the upper end of the shaft above the tip position and at the bottom of the shaft below the lowest loading point. The object of these arrester guides is to retard the velocity of the conveyance and reduce the pressure between the rope and the Koepe sheave to induce a slip condition.

The guide shoes of the lower conveyance enter the

bottom wedge guides before the upper conveyance reaches the wedge guides in the headgear. (See illustration below.) The advantage of this arrangement is that the weight of the downgoing conveyance is removed from the rope and appreciably alters the T_1/T_2 ratio and helps to create a tendency to slip condition. Jack catches are installed in the headgear to prevent the conveyance from falling back, should the rope be detached due to an overwind.

ROPE INSTALLATION

The procedure adopted for the installation of the main hoisting ropes and balance ropes varies at different mine shafts and depends on the types of equipment provided for this purpose and the method of handling the ropes at the site. There are two types of Koepe wheel in general use. The "magazine" type and the plain wheel without magazine, the choice of design adopted depending on which rope reeling facilities are to be provided.

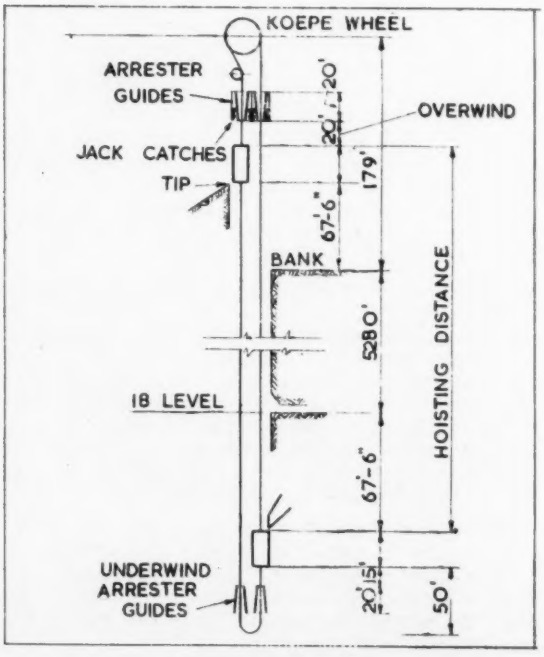
At West Driefontein the shaft is equipped with two Koepe hoists mounted in the tower, and one double drum winder at bank level. The main Koepe hoist is a four-rope hoist and the service Koepe is a two-rope hoist.

A double drum rope reeling winch which will be used in the first instance as a platform hoist for shaft sinking purposes, is located on the west of the shaft at bank level. This reeling winch will be used for installing and changing the ropes on all three of the above-mentioned hoists.

SUMMARY OF REMARKS

The Koepe hoisting system has advantages over other systems in many cases for vertical shafts because of the following considerations:

(a) Economy of installation and operation;
(b) Multi-rope hoisting by the Koepe system increases hoist capacity without increasing the number of hoists and hoist compartments in shafts;
(c) Factors of safety granted for the ropes of Koepe installations now planned show that system of hoisting to have advantages over drum winders for a similar duty. These advantages will considerably increase as and when operating experience permits the Koepe rope factors of safety to be brought in line with those for drum winder ropes;
(d) From purely hoisting considerations, shafts should not exceed the critical depth, i.e., between 5,000 and 5,500 ft.



Arrangement of Guides

The authors suggest that large capacity hoisting shafts equipped with multi-rope Koepe hoists will greatly influence the whole mine layout, particularly underground. They suggest that in deep mines greater economy may be obtained by larger main haulage ways of large capacity feeding fewer hoisting shafts and that more shafts be designed and equipped entirely as ventilation shafts sited and dimensioned to the best ventilation advantage.

Mechanical Segregation of Ore and Waste

In the statements made to members of both West Driefontein and Doornfontein G.M. companies at the annual meetings for the year ended June, 1954, the Chairman gave a clear explanation of the reasons why segregation of ore and waste by simple mechanical screening was both possible and desirable.

In its most typical development the Carbon Leader consists of a thin seam of soft, friable, carbon-rich quartzite, heavily mineralized with pyrrhotite and pyrite on which rests a layer of pebbles, usually less than ¼ in. in size. The thickness of the carbon seam varies from that of a mere pencil streak to a seam of carbon over ½ in. thick. The gold, which is sometimes visible to the naked eye, is intimately associated with the carbon and pyrrhotite. The pebble or reef band seldom exceeds 2 in. or 3 in. in thickness and only rarely attains 12 in. While gold has been observed up to a few inches above the main carbon seam this is rare, and the bulk of the gold is confined to the seam itself. It has been established that, as in the case of gold, the uranium content of the ore is intimately associated with the carbon and pyrrhotite.

The carbon seam, together with its admixture of quartz grains, sulphides, gold and uranium, is generally so friable that even the lightest touch of the finger can crumble a few grains of quartz and carbon from it. It has been found that, as a consequence of the extreme friability of the Carbon Leader, a large proportion of the gold and uranium contents of the reef are contained in the finer fractions of the run-of-mine ore delivered to the sorting and crushing plant. This fact is of prime importance in so far as the mechanical segregation of ore and waste is concerned.

SEGREGATION BY WET SCREENING

This segregation is carried out on run-of-mine ore which has been crushed initially to all minus 5 in. and segregation is achieved by wet screening in two stages. In the first stage the ore is passed over and washed on primary screens of 2 in. or 1½ in. mesh. The clean oversize consists principally of waste, but there is a small proportion of reef present which is removed manually by picking boys as the coarse rock is transported slowly across the picking floor on conveyor belts. The picked reef is used as tube mill pebbles in the milling plant. The remainder is discarded as waste and amounts to between 25 and 30 per cent of the ore delivered to the crushing plant. The ore which passes through the primary screens is then passed through the reduction plant where it is treated for the extraction of gold and subsequently for the extraction of uranium.

MACHINERY AND EQUIPMENT

MINING EQUIPMENT AT THE BRITISH INDUSTRIES FAIR, 1956

In the British Industries Fair, to be held this year from April 23 to May 4, in London and Birmingham, the electrical section has been transferred from Castle Bromwich and will be sited at Olympia, London. The following notes relate to those products to be displayed at the Fair which are of more specific interest to the mining industry.

THE ENGINEERING SECTION

The British LaBour Pump Co., Ltd., is again exhibiting at Castle Bromwich, and this year is bringing the new DZT range to notice. The design of this type of pump has been improved over the earlier type UZ and UL pumps. A tapered open-type impeller is an important feature of design and with this modification a smaller sized pump using less h.p. will achieve capacities hitherto requiring larger and more expensive types.

Examples of the range of magnetic extractors and swarf separators manufactured by *Rapid Magnetic Machines, Ltd.*, will be exhibited at Castle Bromwich in addition to magnetic clutches and brakes. The continued demand for Mineral Separating Equipment has prompted the exhibition of the Laboratory Type "O" machine, the research version of the "O.G." Separator in use throughout many countries.

On the *Dunlop Rubber Company, Ltd.*, stand will be shown the applications of a new material with the longest name in the history of the British Industries Fair. Polytetrafluoroethylene (P.T.F.E.) is specially useful as a covering for rollers in the engineering, electrical, chemical, soap and baking industries. Another feature on the Dunlop stand is a demonstation of how silicone rubber stands up to extremes of heat and cold. Other exhibits are a wide range of conveyor, transmission (Flat or V) and elevator belting; fire-resistant Extron belting for the mining industry and anti-vibration mountings.

Electromagnets, Ltd., are to display all types of permanent and electro-magnetic separators, including magnetic conveyor head units, overband separators, chutes, drums, pulleys and suspension magnets, magnetic clutches and clamping devices.

The Hub Ironworks Co., Ltd., will display soil mechanic equipment, earth boring plant, well boring machinery, earth sampling tools, rotary boring machines and tools, and artesian well boring machinery.

Belt fasteners, belt lacing machines, belt cutter and squarer, flexible steel hinge pins and range of fasteners for P.V.C. belting are to be shown by *Mastabar Mining Equipment Co., Ltd.* The design of the new off-set Comet lacer is little changed from the all-steel lacer introduced last year, the main feature being the re-design of the comb.

The MCU 82 air break mining contactor unit

Permali connecting rods as fitted to the Jenkins Consort reciprocating screen

Mining and Chemical Products, Ltd., are displaying non-ferrous, non-shrinking fusible alloys, Cerrobend filler for tube bending. Cerromatrix for presstools, jigs and anchorages.

"Laminates for Industry," manufactured by the Permali Group of Companies is the overall theme of the stand of *Permali Ltd.*, incorporating Horden Richmond (Sales) Ltd. All grades and types of Permali, Permaglass, Hy-du-lignum will be shown in a variety of applications for general engineering (including colliery engineering), chemical and electrical uses. The more major exhibits include a working Consort reciprocating screen made by W. J. Jenkins and Co. Ltd. and fitted with Permali connecting rods and hangers; coal-mine Permali roof bars supported on Dowty pit props.

British Geon Ltd. will exhibit on the joint stand of the Distillers Industrial Group. The display features the expansion of the British Geon Ltd. plant at Barry, Glam., where production of Geon PVC has now been increased to 27,000 tons p.a.

THE ELECTRICAL SECTION

In the electrical section at Olympia, London, *The British Thomson-Houston Co., Ltd.*, will show marine radar equipment, switchgear, germanium and silicon power rectifiers, electric motors, industrial electronic equipment and Mazda lamps and lighting equipment. Specific exhibits are 2 h.p. electronic motor control equipment, wave guide test gear, infra-red relay equipment, 250-M.V.A. air break switchgear, and germanium and silicon power rectifier assemblies.

Metropolitan-Vickers Electrical Co. Ltd., are displaying a wide range of equipment, such as thermal reactor equipment, generators, etc. In a purely mining context the type MCU82 contactor unit is for squirrel-cage motors driving coalcutters, loaders and conveyors, and is a recent addition to the company's type MU range of flameproof mining equipment. It has been designed to the National Coal Board's Standard Specification No. P.3/1950, for the direct-on starting of squirrel-cage motors—3-phase 50-cyles up to 650 volts. A further exhibit will be a working model of a 9,000-h.p. geared Ward-Leonard Ilgner winder.

The General Electric Co. Ltd., exhibiting for the first time at the Olympia section of the British Industries Fair, will feature on its stand some of the Company's most important activities. There will be demonstrated some examples of modern power equipment, including a complete low-pressure rotor assembly for a 60,000 kW. steam turbine, and a new automatic flameproof gate-end panel used for controlling motors at the mine coal face.

CORRESPONDENCE

TRADE WINDS IN BOLIVIA

THE EDITOR, *The Mining Journal*,

Sir,—My attention has been called to the article in the issue of February 24 entitled "Trade Winds in Bolivia". It contains some serious mis-statements of fact and I feel impelled to write you this note.

First, in dealing with the foreign exchange situation you state that the Bolivian rate of exchange has "hardened appreciably".

The fact is, however, that the Bolivian rate has sunk without variation and I enclose an official statement of the rate from the *Foreign Commerce Weekly* of March 19. Here you will see that the latest quoted rate is 4,700.

As regards the Bolivian measures taken to encourage investment of foreign capital I believe you should be advised that these were undertaken at the insistence of the Department of State which has contributed vast U.S. funds over the past three years for the purpose of subsidizing the falling Bolivian economy. Since such a programme cannot be maintained indefinitely it is very likely that the Department of State advised the Bolivians to take the necessary steps to encourage the investment of foreign capital, and thus to transfer the Bolivian demands from the American foreign assistance programme to private investors.

To date there has been only one experience in which foreign investors have attempted to develop Bolivian oil. A succinct statement of the condition of this particular venture, is enclosed in the reproduction from Hanson's Latin American Letter published here in Washington. From any viewpoint this would be taken to indicate that the Glenn McCarthy oil project has failed to develop either oil or dividends for its investors.

Your reference to the "Matilde" property raises a very special question. This property was developed by the Hochschild companies at an expense in excess of two million dollars. Before the Hochschild investors could begin to secure returns, the decree of nationalization forcibly expropriated the property. It is a matter of record that the Bolivian government has consistently and successfully evaded coming to formal terms on the question of final value for these expropriated properties. Although more than three years have elapsed since the confiscation of these properties, compensation proceedings between the three companies and the present Bolivian government have been blocked by an obdurate refusal of the government to sit down and discuss the values of the seized properties. It may interest you, therefore, to know that the sale or leasing of the "Matilde" property, under these circumstances, would be considered as tantamount to a transfer of stolen property.

In conclusion, therefore, I can only suggest that your coupling of the Brazilian and Bolivian situations has led to a significant error in your final statements. I think a brief review of the matter will show a vast difference in political situations. The eagerness with which the Bolivians are currently inviting new capital does not portend a change in attitude but a realization on the part of the present Bolivian regime that the experiment in nationalization has failed. The Department of State is discouraged by the lack of successful results, and a well-conceived and sustained propaganda effort has been launched by the Bolivians to attempt to entice unwary capital.

I hope that this letter from me will encourage you to resurvey the Bolivian situation and to perhaps write again on this problem with a better presentation of fact.

Yours, etc.,

ADOLPH SILVERSTEIN

Win Nathanson & Associates, Inc.,
New York, U.S.A. March 21, 1956.

The Editor Comments:

We are grateful to Mr. Silverstein for pointing out a wrong emphasis in the Note "Trade Winds in Bolivia." Inflation has not been contained in that country and the exchange rate has continued to move against the Bolivian as he has pointed out. At the time of writing that part of the note—in fact a little before publication—there were general signs of a slowing down in the rate of inflation. But their significance was unfortunately exaggerated and they have since lost some of their strength.

Of the main substance of the Note, however, we find nothing to retract. We maintain that the structure of the Bolivian economy is growing stronger particularly through the oil industry's development. We do not wish to pass comment on the role of private enterprise under the new Bolivian Petroleum Code, as experience under it is too short, but the fact is that Y.P.F.B. is raising an increasing quantity of exportable oil (though this does not mean that it is doing it as quickly or as efficiently as possible).

We are supported in our general view by the *New York Times* which, since publication of "Trade Winds in Bolivia," has itself published a leading article on Bolivia, of which the following is an extract: "It has been a calculated risk that thus far is paying off. The present revolution, which is a real one, is nevertheless moderate. The tin mines were nationalized and, as was to be expected, production and exports fell heavily. At the same time, Bolivia has not been able to produce enough food for her population and there is an inflation which is close to runaway. However, as tin declined, oil rose and is adding a significant element to what was a one-product economy. There is an agrarian reform under way, which is the most significant in Latin America since Mexico's. All in all, Bolivia is a land of tribulation, but also a land of hope."

We are well aware of the extent to which the United States is supporting the Bolivian economy. (Incidentally Mr. Silverstein does not appear very sure of himself. The phrase "undertaken at the insistence of the Department of State" sits very uneasily with the phrase in the subsequent sentence "it is very likely that the Department of State advised"). But, of course, Bolivia is not alone in receiving American public money. We are, indeed, puzzled by the contrast Mr. Silverstein seeks to make between Bolivia and Brazil in this respect. Brazil has had far more government aid (much of it not even in the form of investment assistance, but merely lending operations to permit the funding of previously contracted commercial debt). May we draw his attention to the Autumn 1955 Review of the Chase Manhattan Bank—the main United States bank in Latin America. It states: "Meantime manufacturing investment has continued to grow. Biggest flows of new capital from the U.S.A. last year went to Colombia and Venezuela. Investment in Brazilian and Argentinian manufacturing was almost entirely in the form of re-invested earnings. This was chiefly due to the difficulties in making earnings remittances."

Furthermore the nationalist sentiment in Brazil which has kept foreign enterprise out of Brazilian oil seems to us every bit as strong—and as misguided—as the nationalist sentiment in Bolivia which caused the Bolivians to nationalize tin mining.

Finally the matter of the Matilde copper property. In the second half of the 20th century the right of a sovereign nation to nationalize its own resources cannot be denied—however misguided we think such a policy. *The Mining Journal* is on record many times, as saying that proper compensation must be paid for the nationalized tin industry as for all other nationalized properties. But working the Matilde property seems to us to be no more and certainly no less of a theft than working the tin mines. What makes the operation into a theft is the failure to pay compensation not the decision to start raising zinc. Furthermore it seems to us that chances of getting compensation are improved, not worsened by starting up Matilde. The government can only pay compensation out of revenue and it seems to us a misguided way of insisting on what are undeniable rights to seek to deprive it of revenue.

NICKEL IN RHODESIA

THE EDITOR, *The Mining Journal*,

Sir,—In the January 27 copy of your Journal, on page 126, a news item was published concerning the nickel deposit which our Company—Mineral Search of Africa—is investigating.

I know that you will be interested to know that the information provided to you from, to me, unknown sources, is completely erroneous. We are investigating the area mentioned by you because we found encouraging traces of nickel and copper, but so far we cannot say whether this deposit is of any importance economically. The grade and possible tonnages have to be determined in the course of intensive geological investigation and drilling which we have commenced.

A possible source of nickel supply in the sterling area has a special attraction to me because, as you know, all the Commonwealth's requirements of nickel have to be paid for in dollars and come from Canada. Two-thirds of the Canadian output is given to U.S. stockpiles and only one-third is left to provide for the needs of the Commonwealth and other countries.

Yours, etc.,

O. WEISS.

Mineral Search of Africa (Private), Ltd.,
Johannesburg. February 21 ,1956.

[*The original news item, published in "The Mining Journal," was extracted from "The Sunday Mail," published in Salisbury on December 25, 1955. We are indebted to Mr. Weiss for making the position clear—Ed. M.J.*]

MINING MISCELLANY

The Argentine Miners' Association has urged its members to intensify their search for selenium ore. Some deposits are reported to have been found in La Rioja Province.

* * *

One of the four smelters provided for the Larymna nickel mine in Greece has started operations and will eventually produce 160-170 tons of nickel iron (6 - 7 per cent nickel content) per day. The inauguration of the plant will take place later this year.

* * *

At a recent Cabinet meeting, authorization was given to the Ministry of Commerce and Industry to participate in a newly formed company to exploit Egypt's mineral resources. The capital of this company has been fixed at £E7,000,000, of which 51 per cent will be subscribed by the Government. The other subscribers will be the Industrial Bank and the Misr Bank, together with the latter's group of companies.

* * *

The Greek Ministry of Trade has authorized the firm of AE Barlou Bauxite Ellas to purchase various mining equipment from the U.S.S.R. The value of this machinery, to be bought from V/O Maschine Export in Moscow, is placed at around $35,250. The Greek company is to deliver 50,000 tons of bauxite to Razno-Import of Moscow at a rate of 7,000 tons monthly and part of the value of these shipments, put at a total of $235,000, will be used to offset the cost of the machinery.

* * *

Copper production by the Union Minière du Haut Katanga in 1955 amounted to 2?4,500 tons against 223,791 in the preceding year, according to the Association des Interets Coloniaux Belges. Cobalt production was 8,500 tons against 8,600, while that of tin was almost unchanged at 15,000 tons. Zinc concentrate output during the year amounted to 114,000 tons and that of cadmium to 165 tons. Of the 300,000 tons of manganese ore extracted, 287,000 tons were exported. Other exports included 644 tons of tantalum-columbium, 1,541 tons of tungsten and 81 tons of germanium.

* * *

Thirty firms employing about 17,000 workers and technicians are engaged in sinking mine shafts and the installation of equipment for the opening up of new coal deposits in Western Germany. The annual turnover of the industry is valued at D.M. 250,000,000, including some valuable contracts for the exploitation of new seams and areas in France, the U.K., the Netherlands, Venezuela, and elsewhere. In the German coal mining industry much attention is currently being paid to the raising of sufficient new capital to sink new shafts to offset the gradual exhaustion of the older pits.

* * *

The first trials in Poland with the large-diameter boring method were carried out recently in the Silesia, Jowisz and Wieczorek collieries in Stalinogrod voivoidship. The trials having given good results, production of the necessary equipment has been started. The first series of large-diameter boring edges has been produced in the mining implement factory at Welnowiec, Stalinogrod voivoidship. They will be used in preliminary and ventilation work, as well as in geological surveying. The new edges make it possible to bore holes with a diameter of between 65 and 105 mm. Work on new prototypes is in progress.

* * *

Details of the equipment which it is to supply to the new £80,000,000 integrated iron and steel plant to be built at Durgapur, in West Bengal, have been made available by Head Wrightson and Co., a member of the consortium of British firms known as the Indian Steelworks Construction Co., which is building the plant for the Indian Government. Head Wrightson has been entrusted with the design and manufacture of three blast furnaces, together with gas cleaning plant and complete ore preparation plant to a total value of about £11,000,000. The three blast furnaces will each be capable of producing upwards of 1,000 tons of iron per day. For preparation of the ores an unloading, blending and handling plant will be provided, consisting of a conveying system for delivering the ore to the blending plant at a maximum rate of 900 tons per hr.

* * *

A wall chart showing the most important copper consuming countries of the world has been prepared by A. Strauss and Co. Ltd., of Plantation House, Mincing Lane, London, E.C.3. It shows that the U.S., although the world's largest producer of copper, is unable to satisfy more than two-thirds of her annual metal requirements from her own internal resources. Europe, too, the other major consuming area, has to rely mainly on importation. Three small charts below the map bring out other significant facts about copper. They show that most copper ore is smelted at the point of origin and indicate the steady rise in price brought about by increased consumption and industrial unrest at mines and smelters. The last chart reveals the striking fact that in 1955, for the first time, total output of aluminium actually exceeded that of copper.

* * *

Huntington Heberlein and Co., a member of the Simon Engineering Group, reports that since the beginning of 1955 it has received orders, directly or through main contractors, for nine Dwight-Lloyd continuous sintering plants and associated equipment, comprising three in Britain for Barrow Ironworks, Dorman Long and the Consett Iron Co.; one in South Africa for I.S.C.O.R.; three in France and the French Union for Le Nickel, De Wendel and Société Métallurgique de Normandie; and two in Belgium for Cockerill-Ougrée and Forges de La Providence. Most of the export contracts were secured against keen competition.

PERSONAL

Mr. G. A. Burgess, chairman of the International Tin Research Council and managing director of the British Metal Corporation, has left London for the U.S. on a business visit.

* * *

Mr. W. A. Chapple has been appointed a director of Consolidated African Selection Trust Ltd. in place of the late Mr. Louis Oppenheimer.

* * *

Hadfields Ltd., of Sheffield, have announced the appointment of seven managers and executives to be local directors. They are Messrs. F. A. Bailey, E. H. Booth, H. Cotton, K. B. Crompton, J. F. Squire, Frank Warrilow, and George Wood. These are the first local directors to be appointed since 1948. The appointments bring the total number of local directors to 12. In addition, Mr. D. R. Ward, personal assistant to the financial director and secretary, has been appointed assistant secretary.

* * *

The death has occurred of Mr. Ronald Clifford Rowe, editor of *The Canadian Mining Journal* and president of National Business Publications Ltd. A mining engineer by profession, he was prominently identified with the graphite mining and refining industry for some years and in 1919 designed and installed Canada's first graphite flotation plant.

* * *

The seventh general meeting and members' evening of the Cornish Institute of Engineers will be held at the Camborne School of Mines at 7.15 p.m. on April 27.

* * *

The third international Light Metals Congress, held by the Montanistischen Hochschule Leoben (University of Mining and Metallurgy) in collaboration with the Austrian Light Metals Industry, will take place in Leoben from June 7-9, 1956.

* * *

The Association of German Miners and Metallurgists is holding a congress in Klagenfurt/Kärnten in Austria from June 10-14, 1956. The lectures and discussions, which cover a wide range of subjects will be under the auspices of the Montanistischen Hochschule Leoben and visits from one to five days' duration have been arranged during and following the congress. Trips to mining areas of interest in Italy and Jugoslavia are also planned.

* * *

On and after April 30, 1956, the address of the Wilfley Mining Machinery Co. Ltd. will be Allen Road, Rushden, Northamptonshire. Telephone and telegrams: Rushden 3340.

CONTRACTS AND TENDERS

The International Co-operation Administration (I.C.A.) has announced the following procurements for Formosa: TEN/18889. Hoists, rock drilling equipment, rock bolting materials, hose, hose couplings. Issuing authority, Central Trust of China, Purchasing Department, 68 Yen Ping Nan Road, Taipei, Taiwan (Formosa). Project Implementation Order No. 84-21-259-9-60132 (Invitation No. US-052C). Closing date, 17/5/56. B.O.T. Ref.: ESB9467/56/I.C.A.

* * *

Machinery and equipment for coal mine. Issuing authority, Central Trust of China, Purchasing Department, 68 Yen Ping Nan Road, Taipei, Taiwan (Formosa). Project Implementation Order No. 84-21-259-9-60132 (Invitation No. US-052B). Closing date, 16/5/56. B.O.T. Ref.: ESB/9466/56/I.C.A. Telephone Chancery 4411, Extension 360.

METALS, MINERALS AND ALLOYS

COPPER.—The copper markets on both sides of the Atlantic give daily and increasing signs of weakness; it is an interesting speculation how much further the movement might have gone had the strike at Mufulira not taken place. In London, the Metal Exchange price has moved well below the figure fixed by R.S.T. for its metal and the R.S.T. policy is about to be tested on a falling market. In the United States the custom smelters have again lowered their quotations which on April 18 stood at 47½-48 c. per lb. for May delivery. They report that buying from consumers is light at these figures. No. 2 scrap copper has been offered as low as 38½ c.

Although this downward movement is the most pronounced and widespread for some time, there is no need for panic. The declines have all been restricted to premium metal and there is still a gap between the custom smelters and the 46 c. demanded by the big American producers. However there is nothing in sight—apart from the possibility of a strike somewhere, which can never be discounted—to prevent the further decline in values. The message of the Macmillan budget is that credit restriction must be continued for as far ahead as can be foreseen, and, outside of the United States and Japan, the recent economic expansion has virtually halted. Copper consumers rightly mistrust the price level and the producers themselves want to see the price down—perhaps 10 c. per lb. Yet everybody has an interest in an orderly decline and nothing could be worse than a reckless bearing of the metal. Producers are slowly losing their pre-war caution and one would not like to see it revive as a result of a drastic fall in values.

Statistics give one reason for the decline. Deliveries to American industry in March were 2,200 tons up at 141,590 tons; the highest since November, 1955. Deliveries outside the United States were 24,000 tons up to 121,364 tons, the second highest figure for peace-time. March mine output in the United States was a peace-time record at 100,272 tons; while outside the United States the total of 144,300 tons was the second highest in peace-time.

Expansion plans have been announced by several operators in the Chibougama area 300 miles north-west of Quebec. Opemiska Copper Mines is to expand mill capacity from 800 to 1,200 tons a day; last year the rate was doubled from 400 to 800 tons. New Royran and Copper Cliff Consolidated are to merge and to set a daily output target of 7,000 tons.

The Minister of Industry and Commerce of Eire has said that a number of mining permits have been sought for County Kerry where copper has been reported. The recently formed Irish Mining Corporation is among those said to be interested. Test borings at Beauparc, County Meath, are due to begin on May 1 by Mining Corporation of Ireland. The company has announced that it has received Government approval to develop an area of 50 sq. miles at Castleblaney, County Monaghan, and of 10 sq. miles at Beauparc. The Group announced that it was committed to spending $100,000 on test borings but was prepared to spend $5,000,000 on both mines. Borings might last for up to three years.

The returns of Copper Range Company illustrate the fantastic boom circumstances of American copper mining last year. Net earnings were up from $1.25 a share in 1954 to $5.08 in 1955. The increase was caused by White Pine coming into production at the peak of copper prices last year. Copper Range is said now to be one of the largest producers of copper in the United States.

LEAD.—Lead has been a quiet market in the U.S. on the basis of 16 c. per lb. For the most part the lead producers are satisfied that the present quietness is explicable by a seasonal low rate of battery manufacture which is now about to revive and by a tendency on the part of other consumers to use up inventories. On March 1 stocks of refined lead held by smelters and refiners stood at 32,355 tons the highest level since, July, 1955. Sales of lead for March delivery in the United States were 6,050 tons down compared with those for February.

TIN.—Tin has been a steady market in New York with prices moving only slightly over a narrow range but with a downward tendency. Buying interest has been light with dealers doing most of the small volume of business. The present state of the tin market is a curious one. It is a market that has always shown itself particularly sensitive to developments in the Middle East since an outbreak of fighting there would at the very least divert Malayan and Indonesian supplies round the Cape and seriously interfere with schedules. Moreover, by common consent (and the expressed view of Mr. Eisenhower) the situation has never been worse. Yet the market has completely ignored the situation. Furthermore the decision to keep the Texas smelter going till the end of January, 1957, must postpone the arrival of a heavy surplus and may continue to cause a genuine squeeze. Yet again the market seems unimpressed.

There are two explanations. One is that tin is being strongly influenced by the weakness of copper. The other is that there is some expectation that the Texas contracts—when renewed with Indonesia, the Congo and Bolivia—will prove to be much smaller than those now expiring. The contracts for the last year of operation were calculated to just about take care of what was forecast would be the current surplus. But the rate of surplus is now much less than the 23,000 tons then commonly quoted. It seems clear that the contracts will be much smaller. But how much smaller? It is by no means certain that the contracts will be based on any calculation of probable surplus. They might only suffice to keep the smelter ticking over for six months. Until the market knows the nature of the contracts it is bound to be in a state of uncertainty. Contracts based on a calculation of the likely surplus would probably send the market sharply up again; but "ticking over" contracts would leave the market grappling with an actual surplus without the help of the I.T.A.

ZINC.—Zinc has been quiet and steady in the U.S. on the basis of 13.50 c. per lb. East St. Louis, prime western grade. Most demand has continued to be for the prime western metal. The March figures which showed a slightly lower rate of delivery to consumers at 84,204 tons were remarkable for a sharp rise in the rate of delivery to the stockpile. The March total was 6,821 against 2,782 tons in February; this was still only half the rate of delivery a year ago and emphasizes the great cushion that stockpiling can offer against modest fluctuations in demand. Stocks were up in March at 40,038 but unfilled orders were up much more sharply from 45,255 to 53,070 tons. The Bureau of Mines reports that a new process for recovering electrolytically 99.99 per cent zinc from skimmings has been discovered. It permits a recovery rate of metal of more than 90 per cent.

ALUMINIUM.—In view of the tight metal supply both on the domestic market and throughout the world, primary aluminium producers in the U.S. have asked the Government to order no aluminium for the stockpile during the second half of 1956. During the first half of the year the Government had planned to call for 100 s.tons of the metal for the stockpile, but deferred this amount to private industry. Producers have also recommended much tighter restrictions on the export of aluminium scrap, and that both foil and powder be included as controlled materials. The Bureau of Foreign Commerce (BFC) of the Commerce Department has accordingly reduced by 2,000 s.tons the amount of aluminium scrap that can be exported in the second quarter of the year. Primary and secondary aluminium metal and alloys in crude form continue under open-end licensing.

With the coming into operation of potline No. 3, Alcan has increased its production rate by 30,000 tons to 120,000 tons annually. The fourth and fifth lines are scheduled for operation by the end of 1956, when Kitimat's total capacity will be 180,000 tons a year. It is planned to add another 60,000 tons in 1958 and 60,000 tons more in the following year, thus bringing the company more than half-way towards the final target of 550,000 tons. A new plan by Canadian British Aluminium, a subsidiary of British Aluminium, calls for construction of the Baie Comeau smelter plant in two stages instead of four. Completion is now scheduled for 1961. This plant is expected to be producing 160,000 tons of aluminium annually by 1960.

Reports that Alcan is to construct a 150,000-ton smelter near Evansville, Indiana (*Mining Journal*, April 6, 1956, p. 426), have now been confirmed. Costing approximately $80,000,000, the smelter and a 375,000 kW. steam power plant, fired by coal, will be built on the Indiana side of the Ohio River. Initial production is scheduled for autumn, 1957.

LITHIUM.—The Foote Mineral Co. is producing lithium metal in commercial quantities from a new unit at its plant at Exton, Pa. Officials of the company state that this metal is now being used in the synthesis of vitamin A, in anti-histamine production, as an alloy for non-ferrous metals, and as a scavenger and de-gassifer in the ferrous and non-ferrous metal fields. One of the more promising developments is stated to be the use of lithium metal as a catalyst in the production of synthetic rubber having properties and structure identical with those of natural rubber.

MAGNESIUM.—Dow Chemical Co. has announced a price increase of 1¼ c. per lb. for primary magnesium and increases for other magnesium products. Effective as from April 16, these increases will bring the price of primary pig to 33½ c. per lb. and primary ingot to 34½ c., both at Velasco, Texas. The practice of allowing a 2 c. per lb. discount on primary when the buyer certifies a magnesium end-use will be discontinued. An official of the Dow Co. said that the increases were necessary for several reasons, including a recent rise in freight rates, higher material costs and increased labour costs resulting from new labour contracts signed the previous week. It was also pointed out that the magnesium industry would soon need to expand primary production capacity at a much higher investment per ton. According to reports by the Magnesium Association, primary magnesium production in the U.S. is over 25 per cent greater than in early 1955. At the time of writing, prices in the U.K. remain unchanged.

The Canadian firm of Dominion Magnesium Ltd. reports that magnesium production and sales were satisfactory in 1955 and hopes that full production can be maintained during the current year despite increasing competition. Quality of the metal is noted as being an important factor.

NICKEL.—Mr. Flemming, head of O.D.M., has told the Joint Congressional Defence Production Committee that two U.S. companies "are right at the point where they have found out how to process" low grade Cuban ore. These concerns are Bethlehem Steel Co. and Freeport Sulphur Co. In about three weeks' time the U.S. Government will announce plans to encourage development of the Cuban ore fields, which are the world's largest nickel deposits. This development may be expected in due course to ease the nickel shortage. Meanwhile, the Bureau of Foreign Commerce of the Commerce Department has announced tightened export controls on shipments of certain nickel-bearing scrap materials for the second quarter.

SELENIUM.—The scarcity of selenium has led to tighter controls over exports of selenium-bearing scrap materials from the U.S. Under new regulations effective from April 1, applications to export such materials will only be considered when supported by evidence of unsaleability in the U.S. domestic market or by certification that the materials are being exported under toll or conversion agreement for return to the U.S.

GOLD.—A U.S. Treasury report on monetary gold transactions with foreign governments shows that during 1955 France was the leading purchaser. France purchased $67,500,000 of gold during the first two quarters. Germany was the next biggest purchaser with $10,000,000 and Portugal third, purchasing $5,000,000. The net outward movement of gold from the U.S. amounted to $58,500,000, sales totalling $88,000,000 and purchases $19,500,000.

SILVER.—Britain has started returning to the U.S. the 88,000,000 oz. of silver borrowed during the war under lease-lend arrangements. Repayment is due by April, 1957. At current prices, which have recently fluctuated between 78d. and 79d. an oz., the value of the quantity to be repaid is about £29,000,000, equivalent to more than three times the wartime value of approximately £9,000,000. Most of the silver to be returned has been extracted by the Royal Mint from silver coinage, which is in process of being replaced by cupro-nickel. It is believed that Britain has on hand nearly all the silver required to repay the U.S. in full.

The London Metal Market

(From Our Metal Exchange Correspondent)

The copper price has continued to fall, with only a temporary arrest caused by the one-day strike in Rhodesia, and it now looks as though the 46 c. per lb. level will be tested, but before this can actually happen the custom smelter's price in the U.S. must be reduced to that figure. There are two distinct schools of thought on the Exchange at the moment, the one being that there must be a reaction of some £20-£30 per ton after the recent fall, and the other that there will be nothing to cause any reversal in tendency until the price here has fallen to permit shipment to the States: there is unanimity, however, that whether there is a reaction or not the price of copper is likely to fall again in the fairly near future.

As is to be expected with a falling market there has been very little consumer interest, although actual world consumption remains good and the necessity to buy must soon make itself felt, more especially as American fabricators are unlikely to wish to run their stocks very low in case the unions take strike action to back up the wage claims which have to be negotiated with mines and smelters during the coming weeks.

The tin market has been relatively quiet, and the only item of speculation is the rate of production which will be maintained at the Texas smelter and the corresponding ore intake this will entail. On Thursday morning the Eastern price was equivalent to £772½ per ton c.i.f. Europe.

Lead has been an exceptionally weak market, and it appears that estimates made at the time of the Australian dock strike, that there would be a shortage of metal in this country at the end of April or early May, have been proved wrong: consumer demand is purely of a routine nature and there is plenty of metal to satisfy this.

Zinc prices have shown a tendency to weaken, but this has been due more to the influence of the other price movements than to any intrinsic weakness in the position of the metal itself, as demand throughout the world is being maintained at a good level.

The main question in respect of both lead and zinc is whether the U.S. Government's price support policy will enable American interests to maintain the present E. and M.J. quotations, or whether the tonnage of metal which would be diverted to the States if the London market fell too low would be of such a volume that the prices there would have to be lowered as a protection against excessive imports.

Closing prices and turnovers are given in the following table :—

	April 12		April 19	
	Buyers	*Sellers*	*Buyers*	*Sellers*
Copper				
Cash	£377	£377½	£363	£364
Three months	£371	£377½	£357	£357½
Settlement	£377½		£364	
Week's turnover	5,850 tons		7,325 tons	
Tin				
Cash	£766	£767	£761	£762
Three months	£760	£761	£756	£757
Settlement	£767		£762	
Week's turnover	765 tons		1,225 tons	
Lead				
Current half month	£117½	£118	£113	£113½
Three months	£116½	£117	£112½	£113
Week's turnover	4,050 tons		3,975 tons	
Zinc				
Current half month	£98½	£99	£98	£98½
Three months	£97½	£97½	£96½	£97
Week's turnover	5,000 tons		5,150 tons	

OTHER LONDON PRICES — APRIL 19

METALS

Aluminium, 99.5%, £189 per ton
Antimony—
English (99%) delivered, 10 cwt. and over £210 per ton
Crude (70%) £200 per ton
Ore (60% basis) 23s. 6d./24s. 6d. nom. per unit, c.i.f.
Bismuth (min. 1 ton lots) 16s. lb. nom.
Cadmium 12s. 0d. lb.
Chromium, 6s. 11d. lb.
Cobalt, 21s. lb.
Gold, 248s. 11½d.
Iridium, £29/31 oz.
Manganese Metal (96%-98%) £269 according to quantity
Magnesium, 2s. 4d. lb.
Nickel, 99.5% (home trade) £519 per ton
Osmium, £24/27 oz. nom.
Osmiridium, nom.
Palladium, £8 0s./£8 10s. oz.
Platinum U.K. and Empire Refined £34 0s. oz. Imported £38 0s./£40 0s. oz.
Rhodium, £40/£42.
Ruthenium, £16/£18 oz.
Quicksilver, £85 ex-warehouse
Selenium, 112s. nom. per lb.
Silver, 78⅛d. f.oz. spot and 78⅛ f'd.
Tellurium, 15s./16s. lb.

ORES, ALLOYS, ETC.

Bismuth .. .. 50% 7s. 3d. c.i.f.
40% 6s. 3d. lb. c.i.f.

Chrome Ore—
Rhodesian Metallurgical (semi-friable) 48% £15 15s. 0d. per ton c.i.f.
„ Refractory 45% .. £14 15s. 0d. per ton c.i.f.
„ Smalls 42% .. £12 15s. 0d. per ton c.i.f.
Magnesite, ground calcined .. £28 0s./£30 0s. d/d
Magnesite, Raw (ground) .. £21 0s./£22 0s. d/d
Molybdenite (85% basis) .. 8s. 2½d. nom. per lb. c.i.f.
Wolfram and Scheelite (65%) .. 262s. 0d./267s. 0d. c.i.f.
Tungsten Metal Powder (98% Min. W.) .. 21s. 0d. nom. per lb. (home)
Ferro-tungsten (80%-85%) .. 18s. 0d. nom. per lb. (home)
Carbide, 4-cwt. lots .. .. £39 3s. 9d. d/d per ton
Ferro-manganese, home .. £59 10s. 0d. per ton
Manganese Ore Indian Europe (46%-48%) basis 125s. freight .. .. 102d./105d. per unit c.i.f.
Manganese Ore (43%-45%) .. 97d./98d. per unit c.i.f.
Manganese Ore (38%-40%) .. 90d./92d. per unit
Brass Wire .. .. .. 3s. 6½d. per lb. basis
Brass Tubes, solid drawn .. 2s. 11½d. per lb. basis

THE MINING MARKETS

(By Our Stock Exchange Correspondent)

The main feature of the past week has been the budget. Stock markets prior to Tuesday showed considerable confidence and prices went ahead. The budget itself was considered sound, and strong markets resulted on Wednesday. The main proposals in the budget were designed to assist saving and consolidate deflationary measures already taken. 1955/56 resulted in a considerable surplus above the line and it is intended that 1956/57 should be the same. The measures of control of spending by nationalized industries were considered wise but there was criticism at the high level of government expenditure in which there remains definite room for improvement. The current year has started well. The overall deficit to date is only £17,200,000 against the equivalent figure of £81,200,000 for 1955.

Mining markets were featureless. Kaffirs drifted lower partly due to a native riot in Johannesburg and partly to end-of-account influences. The quarterly results from the Anglo-American Corporation, Central Mining and Union Corporation failed to stem the tide. Individual results were good but in the face of apathy no headway could be made. The lower profit figures by General Mining and the maintained dividend caused the shares to fall away.

Among individual Rand mines, there was also little of interest to report. Blyvooruitzichts produced improved values for the March quarter of 844 in. dwt. against 632 in. dwt. Payability was 98 per cent. Hartebeestfontein announced that arrangements had been made for consolidating the company's outstanding loans which will now carry interest at 6 per cent and repayment will be arranged at fixed intervals The shares hardened as a result.

In the Orange Free State, water bearing fissures continued to cause trouble at many properties. Freddies Consolidated fell back due to continued losses, and the selling of Free State Geduld shares by this company to finance further operations negatived the higher values obtained at the latter mine. Free State Geduld shares fell back as a result. Loraine recorded a further loss but Harmony produced good returns with 81 per cent payability and values of 479 in. dwt., and working higher profits. Better results were a feature of Welkom and the two President mines also did well. This did not prevent them falling back sharply in price. St. Helena and Virginia followed the general trend downward despite more encouraging quarterlies.

West Africans were again flat, market conditions being completely idle. Bremang were a little harder due to the good operating profit for March.

In the miscellaneous gold group, a feature was the rise in Champion Reef due to hopes of reasonable compensation when the Kolar mines are nationalized by the Indian Government. Talks are proceeding between the interested parties. Cam and Motor remained unchanged despite favourable press comment and the satisfactory developments at this old mine. Frontino were better at 46s. due to buying on a market ill-supplied with stock. American interest in St. John del Rey caused a jump in these shares which at one time touched 22s.

Diamonds improved due to hopes that the recent lower sales figures were only of a temporary nature.

In the copper market, prices drifted lower with the fall in the metal price. Bancroft, however, attracted attention and at one time touched 47s. 9d. The higher interim distribution by Messina also brought in buyers for these shares.

There was little doing in the tin market due to lack of interest and the declining price of the metal, an exception being British Tin Investment which went ahead on special buying.

Miscellaneous base metal shares were erratic but manganese issues hardened with the increased demand for steel in the world. Associated Manganese were particularly strong. Amalgamated Collieries have repaid the £650,000 loan from Vereeniging Estates by an issue of ordinary shares at 45s. to the parent company.

Oil shares were a star feature following the budget announcement which was considered to be encouraging for companies intending to convert to oil fuel.

Finance	Price April 18	+ or — on week
African & European	2⅜	—1/16
Anglo American Corpn.	7 7/16	—¼
Anglo-French	19/3	+3d
Anglo Transvaal Consol.	30/-	+1/3
Central Mining (£1 shrs.)	36/9	—3d
Consolidated Goldfields	53/9	—2/9
Consol Mines Selection	32/6	+7½d
East Rand Consols	2/3	+4½d
General Mining	3½XD	—⅛
H.E. Prop.	7/10½	
Johnnies	35/6	—1/-
Rand Mines	3½	
Rand Selection	38/1½	1/3
Union Corporation	35/-XD	—1/9
Vereeniging Estates	4¼	+1/16
Writs	31/10½	
West Wits.	36/-	—1/9
Rand Gold		
Blyvoor	22/9	—9d
Brakpan	6/6	
Buffelsfontein	24/9	—9d
City Deep	10/-	—3d
Consol. Main Reef	18/1½	
Crown	2 3/16	—1/16
Daggas	2 1/16	—⅛
Dominion Reefs	18/-	—1½d
Doornfontein	20/-	—9d
Durban Deep	26/3	—7½d
E. Champs	3/7½	—1½d
E. Daggas	8/7½	+1½d
E. Geduld (4s. units)	32/-	—1/9
E. Rand Props.	2⅜	—3/16
Geduld	4½	
Govt. Areas	4/3	—6d
Grootvlei	20/-	—3d
Hartebeestfontein	36/-	+3d
Libanon	6/10½	
Luipaards Vlei	14/9	—6d
Marievale	20/3	—6d
New Kleinfontein	4/6	
New Pioneer	13/9	+3d
Randfontein	45/6	—3d
Robinson Deep	13/3	—3d
Rose Deep	10/9	+3d
Simmer & Jack	3/9	
S.A. Lands	20/-	—7½d
Springs	2/6	—1½d
Stilfontein	23/6	—1/-
Sub Nigel	30/-	—1/3
Vaal Reefs	27/9	—9d
Van Dyk	2/9	—3d
Venterspost	12/3	—9d
Vlakfontein	16/3	—6d
Vogelstruisbult	20/-	—3d
West Driefontein	5 1/16	—⅛
Rand Gold contd.		
W. Rand Consolidated	35/-	—1/10½
Western Reefs	29/6	—6d
O.F.S. Gold		
Freddies	7/7½	—1½d
Freddies Consolidated	3/9	—3d
F.S. Geduld	3¾	—1/16
Geoffries	11/6	—9d
Harmony	23/9	—9d
Loraine	5/3	—3d
Lydenburg Estates	16/3	
Merriespruit	10/-	—6d
Middle Wits.	11/6	—7½d
Ofsits	52/9	—2/6
President Brand	57/6	—1/10½
President Steyn	28/6	—1/-
St. Helena	24/-	—1/-
Virginia Ord.	10/6	—6d
Welkom	19/6	—1/3
Western Holdings	3¾	—⅛
West African Gold		
Amalgamated Banket	1/9	+1½d
Ariston	5/-	
Ashanti	18/6	—9d
Bibiani	3/1½	
Bremang	1/6	+1½d
G.C. Main Reef	2/3	
Konongo	2/-	
Marlu	2½d	
Taquah	1/6	+1½d
Western Selection	7/3XD	—1½d
Australian Gold		
Gold Mines of Kalgoorlie	12/6	
Great Boulder Prop.	12/-	—9d
Lake View & Star	16/6	+1½d
Mount Morgan	22/9	—3d
North Kalgurli	7/7½	+3d
Sons of Gwalia	3/-	
Western Mining	9/7½	—1½d
Miscellaneous Gold		
Cam & Motor	8/7½	
Champion Reef	6/6	+1/3
Falcon Mines	7/4½	
Globe & Phoenix	26/9	+3d
Motapa	1/3	
Mysore	3/-	+1½d
Nundydroog	7/6	
St. John d'el Rey	21/3	+1/-
Zams	54/4½	—7½d
Diamonds and Platinum		
Anglo American Inv.	8⅞	+½
Casts	24/6	+6d
Cons. Diam. of S.W.A.	7	
De Beers Defd. Bearer	5 11/16	+1/16
De Beers Pfd. Bearer	15¼	+⅛
Pots Platinum	12/4½	—3d
Watervaal	20/-	—3d
Copper		
Bancroft	46/6	+1/3
Chartered	74/6	—1/-
Esperanza	3/4½	—1½d
Messina	10 5/16	+⅛
Nchanga	14⅛	—½
Rhod-Anglo-American	5 11/16	—⅛
Rhod. Katanga	28/3	—9d
Rhodesian Selection	51/-	—1/-
Rhokana	40½	—1
Rio Tinto	3 5/16	
Roan Antelope	28/4½	—1½d
Selection Trust	4 5/16	—⅛
Tanks	7½XD	—⅛
Tharsis Sulphur Br.	5	
Tin (Eastern)		
Ayer Hitam	21/3	
Gopeng	9/-	—3d
Hongkong	6/9	—3d
Ipoh	23/3	—3d
Kamunting	8/10½	—6d
Kepong Dredging	3/-	+3d
Kinta Tin Mines	15/-	—3/-
Malayan Dredging	9/7½	
Pahang	12/3	—3d
Pengkalen	11/9	+4½d
Petaling	8/3	—3d
Rambutan	24/-	
Siamese Tin	9/3	+6d
Southern Kinta	15/6	
S. Malayan	8/1½	—3d
S. Tronoh	7/-	
Sungei Kinta	15/3	
Tekka Taiping	8/7½	+1½d
Tronoh	8/10½	—1½d
Tin (Nigerian and Miscellaneous)		
Amalgamated Tin	11/4½	+3d
Beralt Tin	43/3	—2/9
Bisichi	5/7½	—1½d
British Tin Inv.	22/9	+9d
Ex-Lands Nigeria	2/7½	
Geevor Tin	15/3	—4½d
Tin (Tigerian and Miscellaneous) contd.		
Gold & Base Metal	1/7½	
Jantar Nigeria	5/7½	+1½d
Jos Tin Area	12/3	
Kaduna Prospectors	1/6	
Kaduna Syndicate	2/6	
London Tin	9/7½	—1½d
United Tin	1/4½	—3d
Silver, Lead, Zinc		
Broken Hill South	58/6	—6d
Burma Corporation	4/9	
Consol. Zinc	54/-	+9d
Lake George	15/-	+3d
Mount Isa	19/10½	—4½d
New Broken Hill	44/3	+9d
North Broken Hill	4 1/16	+⅛
Rhodesian Broken Hill	11/10½	—1½d
San Francisco Mines	25/6	+3d
Uruwira	5/4½	—1½d
Miscellaneous Base Metals and Coal		
Amal. Collieries of S.A.	53/1½	—7½d
Associated Manganese	42/6	+3/1½
Cape Asbestos	9/6	+3d
C.P. Manganese	35/-	+1/3
Consol. Murchison	60/-	—2/6
Natal Navigation	3 1/16	
Turner & Newall	107/-	+1/3
Wankie	16/4½XD	
Witbank Colliery	4 1/16	
Canadian Mines		
Dome	$25½	
Hollinger	$47	—2½
Hudson Bay Mining	$124	+1
International Nickel	$163	—1½
Mining Corpn. of Canada	£9¾	—⅛
Noranda	$111	+2
Quemont	£9¾	
Yukon	4/3	
Oil		
Apex	33/-	+6d
Attock	44/-	—3d
Br. Petroleum	6 5/16	+⅛
Burmah	4	+1/16
Canadian Eagle	57/7½	+1½d
Mexican Eagle	20/3	—3d
Shell	8	+1/16
Trinidad Leasehold	39/9	+3/3
T.P.D.	41/-	+1/-
Ultramar	38/-	+1/9

COMPANY NEWS AND VIEWS

More Good Rand and O.F.S. Quarterlies

Quarterly reports in respect of the three months ended March 31, 1956, have now been received from the Anglo American, Central Mining, Johannesburg Consolidated and Consolidated Gold Fields groups. Although these returns have in many cases disclosed excellent development figures, they have attracted little attention in present apathetic gold share markets.

Free State Geduld in the Anglo American group reported overall values of 840 in. dwt. obtained from sampling a total of 2,045 ft. of which 98 per cent was payable. This compared with 798 in. dwt. during the December quarter and only 90 per cent payability. In the No. 1 Shaft Area values of 661 in. dwt. showed a distinct improvement from those of 470 in. dwt. previously. But in No. 2 Shaft Area values fell away slightly to 1,062 in. dwt. from 1,318 in. dwt. Satisfactory progress has been and is being maintained on the 43 and 45 levels which have penetrated the heavy water-bearing zone south of No. 2 Shaft. These levels are being advanced towards the Western Holdings' boundary. Results obtained from a limited amount of reef development undertaken in the area south of this water-bearing zone, disclosed a gold content equivalent to 1,600 in. dwt. No further development values have been announced from work in 41 Haulage North from Western Holdings. Approximately 1,200 ft. remained to be driven at the end of the past quarter before a holing through could be effected between the two mines.

Good values were reported from Presidents Brand and Steyn. At Brand 1,019 in. dwt. and 88 per cent payability compared with 1,053 in. dwt. at the same payability during the December quarter. President Steyn reported in. dwt. sharply increased at 528 from 480, but payability fell away to 90 per cent from 94 per cent. The improvement in Welkom's values to 519 in. dwt. from 450 in. dwt. was particularly encouraging. In addition payability moved up to 90 per cent from 81 per cent. At Loraine values and payability on the Basal Reef were little changed, but work on the "B" Reef revealed 820 in. dwt. against only 786 in. dwt. during the previous three months. Payability, however, declined to 35 per cent from 52 per cent.

Most notable amongst returns from the Central Mining-Rand Mines group was that in respect of Blyvoor. Values obtained at this property were sharply up at 844 in. dwt. from 632 in. dwt. This is the best result obtained for many months, and will be taken as a most encouraging pointer towards a stabilization of grade at this mine. Payability improved to 98 per cent from 96 per cent. Harmony reported payability up at 81 per cent from 70 per cent during the preceding quarter. But values at 479 in. dwt. were little changed. Another encouraging feature was the return from Crown Mines. At this old property values moved up to 353 in. dwt. from 255 in. dwt.

Development values obtained at Freddies Consolidated Mines in the Johannesburg Consolidated group at 295 in. dwt. compared with 302 in. dwt. were little changed from those of the December quarter. But 1,445 ft. sampled in the 17th Haulage East Area at No. 2 North Shaft gave the good value of 524 in. dwt. It has been stated that 230,000 shares of the company's previous holding of 300,000 shares in Free State Geduld Mines have now been sold. It will be recalled that these shares were acquired by Freddies Consolidated as the result of the sale of its No. 2 South Shaft and assets to Free State Geduld.

Payability at 100 per cent was again reported from West Driefontein in the Consolidated Gold Fields group. Values obtained, however, declined from 861 in. dwt. to 802 in. dwt. Doornfontein's gold content was also slightly decreased to 360 in. dwt. from 388 in. dwt., but payability remained at about 95 per cent. Towards the end of the March quarter construction work on the concrete collar for Free State Saaiplaas's No. 1 shaft was started. At No. 2 shaft site drilling continued with the object of sealing off water-bearing fissures by cementation prior to actual shaft sinking.

General Mining Earns Less But Pays Same

With the recommendaiton of a dividend amounting to 15 per cent on its isued ordinary capital of £2,890,772 ordinary shares of £1, General Mining and Finance Corporation has maintained payments for the year ended December 31, 1955, at 25 per cent. The 1954 distribution of 25 per cent was made on the previous capital of £2,009,164. Subject to audit, profits for the year dropped to £906,492 from £1,147,382 in 1954. This was mainly due to the severe fall in sharedealing profits which, at £13,463, hardly bears comparison with the preceding year's total of £451,684. An amount of £540,080 has been written off investments (including subsidiary companies) of which £475,000 was provided from reserves. Sir George Albu is chairman.

Hartebeest's Loan Agremeent

Hartebeestfontein Gold Mining Company's two loans from the Anglo American Corporation—which total £2,100,000—have been consolidated into a single loan carrying interest at the rate of 6 per cent per annum (or 2 per cent higher than South African Bank Rate), whichever may be greater. The loan in its new form will be repayable annually on June 30 as follows: 1956 and 1957—£250,000; 1958—£300,000; 1959 and 1960—£400,000; and 1961—£500,000. The object of this new arrangement is to avoid fluctuations in loan repayments which would have had a corresponding effect on amounts available for distribution. It will also facilitate planning for capital expenditure.

Messina Pays 170 Per Cent Interim

An interim dividend of 170 per cent has been declared by The Messina (Transvaal) Development Co. on its issued ordinary capital of £330,000 in stock units of 5s. During the year ended September 30, 1954, an interim dividend of 150 per cent was followed by a final of 230 per cent making a total of 380 per cent for the year.

Vereeniging Estates' Strong Balance Sheet

The company's consolidated balance sheet at December 31, 1955, showed total assets at £19,349,144 compared with £18,493,918 at the end of the previous year. Fixed assets totalled £14,571,493 (£14,391,903) and current assets of £4,771,651 exceeded current liabilities by £2,671,652. Cash held amounted to £2,526,751. Group net profits for the year 1955 declined to £997,909 from £1,061,194. Dividends absorbed £893,750 (£925,000) and the balance unappropriated rose to £820,546 from £716,387. Mr. T. Coulter is chairman. Meeting, Johannesburg, June 7.

Vereeniging Brick and Tile's Strong Liquid Position

Total assets at December 31, 1955, expanded to £3,187,769 from £2,874,070 at the end of 1954. Current assets at £1,460,758 exceeded current liabilities by £793,857. Cash at bankers, in hand and on deposit totalled £643,747. During the year ended December 31, 1955, group net profits totalled £392,489 against £341,812. After a transfer of £100,000 to general reserve (£50,000) and dividends which absorbed £308,750 (£277,500), the balance unappropriated declined to £117,810 from £134,071. Mr. T. Coulter is chairman. Meeting, Johannesburg, June 7.

Western Selection Obtains Dollar Credit

Speaking at the meeting of Western Selection and Development held last week, Major General W. W. Richards, the chairman, gave details of a $1,600,000 line of credit which had been secured for use by the company's Canadian interests. This credit line—which originates with the Export-Import Bank—has been granted to the company by the Construction Equipment Division, Baldwin-Lima Hamilton Corporation. General Richards disclosed that the terms obtained were satisfactory and that repayment was to be effected by way of mineral shipments over a period. The funds would, he said, be used for purchases of plant and machinery in the United States for use in Canada.

Konongo Still Milling More Than 20 Dwt. Ore

Balance sheet figures at September 30, 1955, showed total assets at £1,273,860 compared with £1,228,312 previously. Of this figure fixed assets amounted to £443,954 (£457,369) while current assets of £691,837 exceeded current liabilities by £476,476. Tax reserve certificates and cash held at September 30 totalled about £595,000. During the past financial year, Konongo's total revenue moved up to £500,572 from £452,179. After all expenses and taxation net profits totalled £98,411 against £86,650. Dividends absorbed £62,313 compared with £52,637 and unappropriated profits carried forward rose to

£84,457 from £63,714. Tonnage milled during the year (including that on behalf of Lyndhurst Deep which amounted to 12,090 tons) totalled 52,750 tons compared with 46,250 tons. Grade obtained was 20.4 dwt. per ton compared with 22.5 dwt. per ton while working costs per ton milled fell to 26s. from 26s. 11d. Mr. Robert Annan is chairman. Meeting, London, May 8.

Great Boulder Prop. Earns More

Total assets at December 31, 1955, amounted to £A1,027,903 compared with £A1,019,180 at the end of the previous year. Current assets of £A466,652 exceeded current liabilities of £A197,919 by £A268,733. The company has a deferred liability in the form of a loan from Loloma (Fiji) Gold Mines N.L., which totalled £A80,000 at December 31, 1955 (£A100,000). Total revenue earned during the financial year rose to £A1,823,693 from £A1,710,001. Net profits after expenses and taxation moved up to £A216,369 from £A206,955. Dividends absorbed £A156,250 (same) and an amount of £A40,000 (nil) was transferred to general reserve. The balance carried forward increased to £A47,463 from £A46,784. Mr. A. M. Coulson is chairman and managing director. Meeting, Melbourne, Australia, May 9.

Burma Mines Ltd.

Total assets at December 31, 1955, expanded to £2,772,818 from £2,577,990. The company's investment in Burma Corporation (1951) amounting to 3,159,730 "B" shares of K.10 each fully paid, were entered at £2,369,797 (same). Current assets of £253,340 exceeded current liabilities by £110,651. Reflecting the receipt of a dividend amounting to 8¼ per cent from Burma Corporation during the past financial year which totalled £195,508 (£35,547) revenue earned increased to £215,382 from £54,227. After taxation of £18,772 (£1,073) Burma Mines paid a dividend of 3.913d. per share less income tax, which absorbed £126,953. The balance carried forward improved to £86,360 from £33,494. Mr. J. R. Govett is chairman. Meeting, London, May 1.

Bisichi Pays 40 Per Cent

The Bisichi Tin Co. (Nigeria) has recommended a dividend of 40 per cent in respect of the year ended December 31, 1955, on its issued ordinary capital of £460,000 in shares of 2s. 6d. During 1954 total distribution amounted to 50 per cent. Net profits after taxation were little changed at £139,362 from £139,436. The meeting has been provisionally arranged for May 17. Mr. O. V. G. Hoare is chairman.

AMALGAMATED COLLIERIES OF SOUTH AFRICA, LIMITED

(Incorporated in the Union of South Africa)

MR. T. COULTER'S REVIEW OF ACTIVITIES

The following are extracts from the statement by the Chairman, **Mr. T. Coulter,** which has been circulated with the annual report and accounts :—

Coal mining operations are conducted firstly through the medium of the company's own collieries, Cornelia, near Vereeniging, and Schoongezicht, in the Middleburg district, and secondly through the wholly-owned subsidiary Springfield Collieries, Limited, near Balfour.

In addition the company has considerable interests in New Largo Colliery Limited and in Blesbok Colliery Limited, both producing collieries, and in Witbank Coal Holdings Limited, a company formed some years ago to hold and lease coal-bearing properties in the Witbank district.

ACCOUNTS

The following is a summary of the salient points in the profit and loss and appropriaiton accounts :—

	1955	1954
Net profit	£765,727	£736,880
Less: Provision for taxation	115,702	131,506
Profit after taxation	£650,025	£605,374
Add: Unappropriated profits brought forward	344,918	232,548
Non-recurrent credits	21	8,239
	£994,964	£846,161
Less. Writings off	5,313	743
	£989,651	£845,418
Less: Net silicosis liability to December 31, 1953	21,480	—
	£968,171	£845,418
Less: Dividends paid, 3s. 6d. per £1 share	500,500	500,500
Unappropriated profits	£467,671	£344,918

Dividend income improved in consequence of higher distributions by New Largo Colliery Limited and Blesbok Colliery Limited, and first distributions by Witbank Coal Holdings Limited.

Current assets of £894,658 exceeded current liabilities and provisions by £274,686. Current assets, however, included stores to the value of £182,302, so that the liquid surplus was £92,384 which should be regarded as being reserved for contingencies.

In last year's review I stated that your Board was considering ways and means of dealing with the loan of £650,000 raised from The Vereeniging Estates, Limited, which has been used for capital expenditure. It was decided to increase the authorized capital of the company from £3,000,000 in shares of £1 each to £3,200,000, and thereafter to offer 250,000 reserve shares for subscription at 45s. per share. These transactions were duly completed, and the sum thus raised together with approximately £102,000 of accumulated profits was used to repay the company's loan indebtedness to The Vereeniging Estates, Limited. The issued capital is now £3,110,000 in shares of £1 each and there are 90,000 shares in reserve.

GENERAL

Coal prices remain subject to official control and much needed relief was provided in November, 1955, when pithead price increases ranging from 2s. 6d. to 3s. for duff coal, according to quality, and 1s. 8d. per ton for other coals were granted in respect of Transvaal and Orange Free State collieries.

These increases will cover higher production costs and also enable the collieries to make some provision for renewals, replacements and other items concerned with continuity of operations on an efficient basis.

Excluding the road haulage levy of 10d. per ton, the present controlled pithead prices of Transvaal and Orange Free State coals are :—

	Per short ton
Duff coal :	
(a) for coal of a calorific value of up to 12 lbs./lb.	8s. 4d.
(b) for coal of a calorific value in excess of 12 lbs./lb.	8s. 10d.
All other coals :	
(a) for coal of a calorific value of up to 12 lbs./lb.	10s. 6d.
(b) for coal of a calorific value in excess of 12 lbs./lb.	10s. 11d.

These prices are very low in comparison with those ruling anywhere else in the world and are of special significance in relation to possible competition from energy to be derived from nuclear sources. In fact pithead power stations of the Electricity Supply Commission in the Transvaal and Orange Free State obtain their coal supplies under long term contracts at somewhat lower figures than the controlled prices and their fuel costs are so relatively low that great progress will have to be made in the art of producing power from atomic reactor stations before uranium or other fissionable materials can compete with coal as a fuel in these stations.

On the other hand, power stations that are far distant from the coalfields and have to pay heavy railage charges on supplies of coal, may, within a decade or so, find it economically possible to supplement existing capacity by installing nuclear reactors. This possibility applies particularly to new power undertakings that may have to be established, for example, in the Cape Province, where coal supplies involve a railway haul of 800 to 1,100 miles.

Such developments would provide relief to our railway system and ultimately assist the coal industry in releasing tonnage to meet the growing demands of nearby internal consumers, and perhaps make available some tonnage for the export trade.

THE VEREENIGING ESTATES, LIMITED

(Incorporated in the Union of South Africa)

MR. T. COULTER ON INCREASED DEMAND FOR COAL

The following extracts are from the statement by the Chairman, **Mr. T. Coulter,** which has been circulated with the annual reports and accounts :

Accounts

	1955	1954
	£	£
Net Profit for the year	1,017,337	980,326
Balance of Profit brought forward from the previous year	238,179	217,356
	1,255,516	1,197,682
The following appropriations were made :—		
Provision for Taxation	33,900	34,503
Written off Share Investments ...	113,718	—
Transferred to General Reserve Account	—	100,000
Interim Dividend of 10% ...	275,000	275,000
Provision for a Final Dividend of 22½% as compared with a Final Dividend of 20% in the previous year	618,750	550,000
Total appropriations	1,041,368	959,503
Balance of profit carried forward ...	£214,148	£238,179

The sum of £113,718, written off against Share Investments, is in respect of pre-acquisition profits on holdings in the subsidiary companies, Springbok Colliery Limited and Transvaal Coal Corporation Limited, which were acquired in 1949 and 1951 respectively.

Current assets amounted to £1,751,041 and exceeded current liabilities by £1,045,238.

The results quoted above are in respect of the company's own accounts before consolidation.

Colliery Interests

Your subsidiary colliery companies, in common with other producers of coal, are still handicapped by shortage of railway transport to meet the full requirements of the internal market. This shortage has to some extent been met by organized road transport on an increasing scale.

A special levy of 10d. per ton is now being collected on all coal sold other than coal consumed at pithead power stations, the proceeds of which are being utilized to assist those consumers who are required to meet the additional cost of road haulage as compared with railway transport.

The Railway Administration is fully alive to the gravity of the transport situation, and extraordinary efforts are being directed towards expanding the coal carrying capacity of the railway system.

While the present situation persists, it is impossible for the industry to engage in the export of coal, and only a very limited tonnage, mainly for bunker purposes, is now being shipped.

The demand for coal in the Union continues to increase and your subsidiary companies are likely to be fully occupied during the current year in supplying their quotas of tonnage. During 1955 the coal industry of the Union produced 33,060,650 sales tons, being an increase of 2,216,532 tons as compared with the previous year.

In the latter part of the year, increases in the price of coal ranging from 1s. 8d. per ton in the case of Rounds, Nuts, and Peas, to 3s. per ton in the case of better qualities of Duff, were granted by the Price Controller. These increases will bring much needed relief to the Transvaal and Orange Free State industry in meeting higher production costs and in providing a very necessary margin for expansion of output, replacement of equipment and other demands in order to ensure continuity of operations on an efficient basis of production.

Amalgamated Collieries of South Africa Limited

Results of this subsidiary in comparison with the previous year are as follows :—

	1955	1954
Sales tons	6,881,884	6,903,259
Net Profit after Taxation	£650,025	£605,374
Rate of Annual Dividend, per share ...	3s. 6d.	3s. 6d.

The Coronation Collieries Limited

Results of this company's operations for the year 1955 are set out as follows :—

	1955	1954
Sales tons	1,050,029	1,050,490
Net Profit after Taxation	£356,045	£331,501
Rate of Annual Dividend, per share ...	1s. 9d.	1s. 9d.

The Kromdraai Colliery in the Witbank District, owned and operated by this company, relies entirely on the South African Railways for the despatch of its output, and as a result of railway difficulties in the supply of trucks, the sales output was considerably short of expectations.

Springbok Colliery Limited

The operating results of this company for the year are summarized as follows :—

	1955	1954
Sales tons	870,530	831,384
Net Profit after Taxation	£172,787	£170,525
Rate of Annual Dividend per Stock Unit	1s. 7½d.	1s. 7½d.

During the year arrangements were entered into with the South African Iron and Steel Industrial Corporation Limited (Iscor) for the supply of coking coal from No. 5 Seam, despatches to commence about the middle of 1957. Plans have also been made to supply a substantial tonnage of gas coking coal from No. 5 Seam for consumption by various Gas Works in the Union. The total output requirements from No. 5 Seam have not yet been finalized but it is expected that production will not be less than 28,000 tons per month.

It is estimated that this programme of output expansion will involve capital expenditure of the order of £500,000, and plans for financing these requirements are now under consideration.

Transvaal Coal Corporation Limited

This wholly owned subsidiary owns an extensive coalfield situated in the neighbourhood of Springbok and Bleshok Collieries, in which boring operations have proved the existence of very considerable reserves of high grade coal. A dividend of 7d per share on the 250,000 shares of £1 each was received by your company during the year under review.

South African Coal Estates (Witbank) Limited

Your company owns a substantial interest in this company. The following particulars are in respect of the company's financial year which ends on June 30 :—

	1955	1954
Sales tons	1,612,885	1,639,616
Net Profit after Taxation	£239,930	£210,309
Rate of Annual Dividend per share ...	3s. 6d.	4s. 0d.

The rate of dividend has been slightly reduced so that provision may be made out of profits to build up cash resources for capital expenditure to be incurred in approximately seven years' time for the replacement of the Landau No. 3 Mine.

Vereeniging Brick and Tile Company Limited

Results of operations for 1955 in comparison with 1954 are as follows :

	1955	1954
Net Profit after Taxation	£392,257	£334,221
Rate of Annual Ordinary Dividend, per share	1s. 1½d.	1s. 0d.

The demand for this subsidiary company's products continues to increase, and the year 1955 showed a record turnover.

Proposals to increase the steel output of the Union, already announced, will bring about a higher demand for refractory materials in due course. Plans have already been made to increase production as and when required.

Estate and Township Interests

The property market generally was at a low ebb throughout 1955 and only nine stands were sold by the company.

Revenue from the company's farms in the Vereeniging District was satisfactory.

Copies of the annual reports and accounts may be obtained from the Company's London Office, 11 Old Jewry, E.C.2.

WESTERN SELECTION & DEVELOPMENT

The 26th annual general meeting of Western Selection and Development Co. Ltd., was held on April 12 in London.

Major-General W. W. Richards, C.B., C.B.E., M.C., Chairman, presided. The following is an extract from his Statement circulated with the report and accounts for the year ended September 30, 1955 :

The strike of African mineworkers in the Gold Coast Colony which began on November 20, 1955, and ended on February 27, 1956, has seriously affected the economy of the gold mining companies in which we are largely interested.

After providing for income tax on dividends received the profit for the year amounted to £102,066 to which must be added £69,277 brought in from the previous year, making a total of £171,343.

We recommend the payment of a dividend for the year of 10 per cent less tax. In considering the rate of dividend for the year due regard has been paid to the fact that the capital has been increased during the year and the additional capital has been employed in the business for approximately six months. We have also considered our financial commitments both in West Africa and Canada and the effect of the strike to which I have already referred.

The bulk of our investment holdings are in mining companies in West Africa. The stock market has not been particularly active in this field and the opportunities of turning such investments to profitable account have been limited. Our investments at September 30 last had a Market Value of £1,056,869 against a Book Value of £1,088,641. In addition, we held unquoted securities at a cost of £113,893.

Our holdings in Companies mining for tin and columbite in Nigeria continue to yield satisfactory results.

During the period under review a Canadian Company under the title of Anglo Barrington Mines Limited was registered in the province of Manitoba, to prospect, develop and exploit nickel, copper and uranium claims acquired in the provinces of Saskatchewan and Manitoba. This Company has set up a team of highly qualified geologists and mining engineers to carry through the development programme necessary to prove the potentialities of the properties.

The report and accounts were adopted.

ROSE DEEP, LIMITED

(Incorporated in the Union of South Africa)

Extracted from the Annual Report for the Year ended December 31, 1955

Authorised and Issued Capital £490,000 in 14s. Shares, fully paid

Tons Milled 668,000	**Gold produced 104,872 f.oz.**	Per ton milled
Working Revenue	£1,319,021	£1 19 6
Working Expenditure	1,257,038	1 17 8
Working Profit	61,983	£0 1 10
Add Sundry Revenue *less* Expenses	45,050	
	107,033	
Taxation	6,434	
Profit after Taxation	100,599	
Balance of Income and Expenditure Account	305,054	
		405,653
Reduction of Capital *less* Credits on Mining Assets and Trade Investments		90,583
Balance of Income and Expenditure Account at December 31, 1955		£315,070

The ore reserve at December 31, 1955, was re-estimated as follows :—

Reef	Available			Shaft and Safety Pillars			Total		
	Tons (000s)	Value Dwt.	Width In.	Tons (000s)	Value Dwt.	Width In.	Tons (000s)	Value Dwt.	Width In.
Main Reef	225	4.0	61.6	1	5.3	44.0	226	4.0	61.5
Main Reef Leader	15	3.6	59.9	16	4.3	48.9	31	3.9	53.7
Composite Reef	68	3.9	53.0	59	5.8	53.5	127	4.7	53.2
South Reef	126	3.6	54.1	74	5.7	63.5	200	4.4	57.3
Total	434	3.9	57.8	150	5.5	57.3	584	4.3	57.7
Previous Year	965	3.6	59.6	207	4.9	57.2	1,172	3.8	59.1

At the forthcoming Ordinary General Meeting it is proposed to consider and, if thought fit, pass a Special Resolution reducing the authorized capital to **£402,500** by returning **2s. 6d.** per share in cash to shareholders.

The full Report and Accounts may be obtained from the London Secretaries, A. MOIR & CO., 4 London Wall Buildings, E.C.2.

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CROWN MINES, LIMITED

(Incorporated in the Union of South Africa)

Extracted from the Annual Report for the Year ended December 31, 1955

Capital : £1,000,000 in 10s. Shares. £943,062 10s. issued, fully paid.

Tons milled 3,588,000 Gold produced 574,922 f.oz.

		Per ton milled
Working Revenue	£7,224,741	£2 0 3
Working Expenditure	6,628,210	1 16 11
Working Profit	£596,531	£0 3 4
Add Sundry Revenue *less* Expenses	213,520	
	810,051	
Taxation (£132,055) and Mineral Lease Consideration (£1,716)	133,771	
Profit after Taxation and Lease Consideration	676,280	
Balance of Income and Expenditure Account	1,118,584	£1,794,864
Dividends declared—Nos. 108 and 109 each of 3s. 6d. per share	660 144	
Retransfer from Capital Reserve—realization of Mining Assets and Trade Investments	149,566	510,578
Balance of Income and Expenditure Account at December 31, 1955		£1,284,286

The ore reserve was re-estimated at December 31, 1955. This estimate together with that of the previous year is as follows :—

Reef	Available			Shaft and Safety Pillars			Total		
	Tons (000s)	Value Dwt.	Width In.	Tons (000s)	Value Dwt.	Width In.	Tons (000s)	Value Dwt.	Width In.
Main Reef	209	4.7	47.9	—	—	—	209	4.7	47.9
Main Reef Leader	5,561	4.6	48.4	2,870	5.9	47.5	8,431	5.1	48.1
South Reef	887	3.9	50.4	770	4.5	51.2	1,657	4.2	50.8
Total	6,657	4.5	48.6	3,640	5.6	48.3	10,297	4.9	48.5
Previous Year	7,453	4.2	48.5	4,647	5.8	48.1	12,100	4.8	48.4

The full Report and Accounts may be obtained from the London Secretaries, A. MOIR & CO., 4 London Wall Buildings, E.C.2.

CITY DEEP, LIMITED

(Incorporated in the Union of South Africa)

Extracted from the Annual Report for the Year ended December 31, 1955

Capital : £2,500,000 in £1 Shares. £2,062,832 issued, fully paid

Tons milled 1,936,000 Gold produced 367,580 f.oz.

		Per ton milled
Working Revenue	£4,618,484	£2 7 9
Working Expenditure	4,595,049	2 7 6
Working Profit	23,435	£0 0 3
Add Sundry Revenue *less* Expenses	88,976	
	112,411	
Taxation	1,905	
Profit after Taxation	110,506	
Balance of Income and Expenditure Account	717,719	
		£828,225
Expenditure on Mining Assets and Trade Investments		137,814
Balance of Income and Expenditure Account at December 31, 1955		£690,411

The ore reserve was re-estimated at December 31, 1955, as follows :—

Reef	Available			Shaft and Safety Pillars			Total		
	Tons (000s)	Value Dwt.	Width In.	Tons (000s)	Value Dwt.	Width In.	Tons (000s)	Value Dwt.	Width In.
Pyritic Quartzites	16	4.0	70.0	—	—	—	16	4.0	70.0
Main Reef	135	4.0	58.2	11	4.5	62.5	146	4.1	58.5
Main Reef Leader	2,768	6.7	40.8	620	6.2	44.9	3,388	6.6	41.5
South Reef	748	4.3	46.4	106	4.7	41.5	854	4.3	45.7
Total	3,667	6.2	42.3	737	5.9	44.6	4,404	6.1	42.7
Previous Year	4,333	5.9	42.1	822	5.7	44.4	5,155	5.9	42.5

The full Report and Accounts may be obtained from the London Secretaries, A. MOIR & CO., 4 London Wall Buildings, E.C.2.

EAST RAND PROPRIETARY MINES, LIMITED

(Incorporated in the Union of South Africa)

Extracted from the Annual Report for the Year ended December 31, 1955.

Capital : £2,000,000 in 10s. Shares. £1,980,000 issued, fully paid

Tons milled 2,540,000 Gold produced 625,440 f.oz.

		Per ton milled
Working Revenue	£7,858,701	£3 1 10
Working Expenditure	5,845,582	2 6 0
Working Profit	2,013 119	£0 15 10
Add Sundry Revenue *less* Expenses	101,574	
	2,114,693	
Taxation	694,302	
Profit after taxation	1,420,391	
Balance of Income and Expenditure Account	879,468	£2,299,859
Expenditure on Mining Assets *less* Realization of Trade Investments	534,349	
Dividends declared—No. 71 of 1/9 and No. 72 of 2/- per share respectively	742,500	
		1,276,849
Balance of Income and Expenditure Account at December 31, 1955		£1,023,010

The ore reserve was re-estimated as at December 31, 1955, as follows :

Reef	Available			Shaft and Safety Pillars			Total		
	Tons (000s)	Value Dwt.	Width In.	Tons (000s)	Value Dwt.	Width In.	Tons (000s)	Value Dwt.	Width In.
Main Reef	589	4.5	53.3	440	3.9	61.4	1,029	4.3	56.4
Main Reef Leader	402	4.8	43.8	475	5.5	47.4	877	5.2	45.7
Composite Reef	3,120	7.5	43.4	768	5.0	58.8	3,888	7.0	45.8
South Reef	398	4.1	44.5	98	5.6	51.3	496	4.4	45.7
Total	4,509	6.6	44.6	1,781	4.9	55.4	6,290	6.1	47.2
Previous Year	5,424	5.7	46.0	2,217	4.5	54.9	7,641	5.4	48.2

The full Report and Accounts may be obtained from the Secretaries of European Committee, A. MOIR & CO., 4 London Wall Buildings, E.C.2.

DURBAN ROODEPOORT DEEP, LTD.

(Incorporated in the Union of South Africa)

Extracted from the Annual Report for the Year ended December 31, 1955

Capital : £1,200,000 in 10s. Shares. £1,162,500 issued, fully paid

Tons milled 2,170,000 Gold produced 367,477 f.oz.

		Per ton milled
Working Revenue	£4,617,831	£2 2 7
Working Expenditure	4,007,827	1 16 11
Working Profit	610,004	£0 5 8
Add Sundry Revenue *less* expenses	51,686	
	661,690	
Taxation	102,396	
Profit after Taxation	559,294	
Balance of Income and Expenditure Account	687,076	£1,246,370
Expenditure on Mining Assets and Trade Investments	£303,460	
Dividends declared—Nos. 69 and 70 each of 1s. 3d. per share	290,625	594,085
Balance of Income and Expenditure Account at December 31, 1955		£652,285

The ore reserve was re-estimated as at the 31st December, 1955. This estimate, together with that of the previous year, is as follows :—

Reef	Available			Shaft and Safety Pillars			Total		
	Tons (000s)	Value Dwt.	Width In.	Tons (000s)	Value Dwt.	Width In.	Tons (000s)	Value Dwt.	Width In.
Main Reef	5,758	4.5	62.2	634	4.1	67.7	6,392	4.4	62.7
Main Reef Leader	58	4.8	37.9	22	3.5	40.5	80	4.4	38.6
South Reef	487	4.0	41.4	—	—	—	487	4.0	41.4
Kimberley Reef	2,023	3.2	63.5	—	—	—	2,023	3.2	63.5
Total	8,326	4.1	60.4	656	4.1	66.2	8,982	4.1	60.8
Previous Year	8,413	4.2	60.2	678	4.0	64.4	9,091	4.2	60.5

The full Report and Accounts may be obtained from the London Secretaries, A. MOIR & CO., 4 London Wall Buildings, E.C.2.

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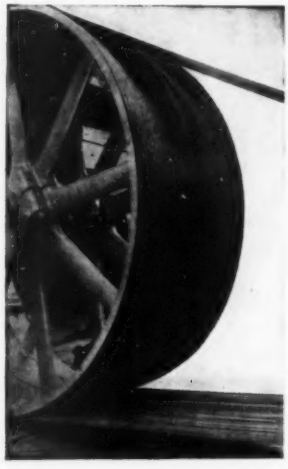

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